

BUREAU OF EDUCATION
INDIA

OCCASIONAL REPORTS
No. 13.

BILINGUALISM

(with special reference to Bengal)

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CALCUTTA: GOVERNMENT OF INDIA
CENTRAL PUBLICATION BRANCH
1928

“ The Conference desires to recognize the desirability of scientific investigation of the facts of bilingualism with reference to the intellectual, emotional and moral development of the child, and the importance of the questions of practical educational method arising out of the investigation of such facts ”

Imperial Education Conference, 1923.

INTRODUCTION.

This is a book of creative power. It will touch the imagination, and colour the judgment, of all who read it. It is scientific, compassionate, practical. It brings a message to India and to Britain. And not to India and to Britain only but to men and women in all countries, East and West.

In order that we may live a more abundant life, we look for means of lessening the cost, both in time and money, of the essentials of life. Among the essentials of life are not only material things, but things intellectual and spiritual. Year by year knowledge and thought become more and more necessary for vivid living. Knowledge and thought depend on the instrument of language. Most intimate and expressive of all languages is our mother-tongue. But our mother-tongue, whatever it may be, does not suffice for all we want to hear and read and say. Even if we are born into the inheritance of a mother-tongue which has the wide currency of a world-language, we need sufficient command of another language in order that we may have the key to what otherwise is locked against us and in order that we may more fully understand the meaning and value of words in the passage of thought and sympathy. If, on the other hand, our patrimony is one of the little languages spoken relatively by few, we need to master as our second language one of those which are passports.

Mr. Michael West aims at making easier for the multitude of men and women this travel and traffic of the mind.

Michael E. Sadler

UNIVERSITY COLLEGE, OXFORD

May 16, 1926.

To

SIR PHILIP HARTOG, C.I.E., D.C.L.

.

THE SCOPE AND PURPOSE OF THE BOOK.

It may economise the time of readers, especially of such as are interested rather in the general problems of bilingualism and of language-teaching than in the local aspects of these matters in Bengal, if some preliminary survey be given of the aim and scope of this book.

Man needs two kinds of language; he needs an expression of the "dear and intimate things," a language of the home, the fire-side, the mother-land,—a language of emotion and of unexpressed associations. He needs also language of fact, knowledge, exact argument, scientific truth,—a language in which words are world-current and steadfast in their meanings. The small languages of the world fulfil the first purpose, but as time goes on they prove more and more insufficient for the second, insufficient for the complexity, the variety, the international "team-work" of modern knowledge. On the other hand the last century of history has emphatically established the sanctity of the small nation and the minor language, and the impossibility of absorbing them into larger national and cultural units.

It follows therefore that the majority of the nations of the earth must inevitably, as time goes on, become bilingual.

Now there is an essential difference between a bilingual and a unilingual country; in the latter only the few children of more marked linguistic capacity, or of wealth and leisure, at their own option study a foreign language, whereas in the former (the bilingual country) the average child—and even the child below the average—is compelled by hard necessity to acquire a second language. It is only with some difficulty that the child with linguistic capacity acquires an efficient knowledge of a foreign tongue; how much more liable to be unfruitful is the attempt of the merely average child and the child who is below the average? The clever child has time to spare; the average child has not. Even if the average child succeeds in obtaining the necessary command over the second language, his success is too often bought at the cost of a reduction of the time spent on other subjects which he is unable to afford. He has thus the choice between Speech and Knowledge,—between linguistic and educational insufficiency.

This impossible dilemma can be removed only by reducing the linguistic burden of the bilingual child to a minimum, and this can be achieved only by an exact analysis of his precise needs in respect of the second language. What is the least that it must enable him to do? (The boy who has time, capacity and incentive may always learn more)..... The mother-tongue of the bilingual child suffices for the "dear and intimate things" of the home; it does not suffice to put him in touch with the world of exact thought and knowledge. What then must the second language enable a child to do? It must enable him to read.

Our problem then, is to discover a means of producing silent reading ability¹ in a foreign language and of doing this with the minimum expenditure of time and of effort on anything else.

* * * *

This investigation involves two processes,—experimental teaching, and measurement of the result. But, perhaps contrary to expectation, measurement is the first step. For in attempting to measure a mental function we enable ourselves to analyze it, and the more exact the analysis of the result to be aimed at, the 'purer' and more specific will be the system of practice which may be devised for obtaining that result.

The measurement of reading in a foreign language shows that it consists of three main elements—(1) Vocabulary, (2) Word by word reading, and (3) Skimming. Skimming is the method generally used by the efficient adult reader; reading word by word is the method of the unpractised child. It was, however, found that as little as sixteen hours of specifically designed practice in English reading sufficed to produce the adult type of reading in seventeen year-old Bengali students who had previously shown only the childish type of word by word reading. It was further observed that although practice had been in English only, an equal (or actually larger) improvement took place in the rate of reading in the mother-tongue.

Thus reading ability seems to be a thing independent of language. The specific problem of learning to read a foreign

¹ The precise significance of this term is discussed in Chapter 6 below.

language would appear therefore to be a matter mainly of Vocabulary.

* * * *

The acquisition of reading ability in a foreign language *ab initio* is probably the aspect of this problem which is of greatest general interest; and the indication that it may eventually be possible rapidly and easily—by arm-chair work—to obtain such reading power in a foreign language is the point which tends most to capture the imagination. There are few educated persons in the world who do not desire to explore for themselves the literature of some foreign people or other.

In any system of practice the first essential is that the actual function to be developed should itself be practised, that the teacher should not rely, if it can be avoided, on the “transference” of effect from some indirect practice; for in all indirect practice there is a certain waste, a certain amount of work expended whose complete effect cannot be “transferred.”¹ Now speaking, writing, learning lists of words, saying the meaning of lists of words are not the same thing as Reading. One may be able to give the meanings of the words in a list and yet be unable to interpret these same words as they occur in the process of reading. Reading is best practised by reading.

We must therefore devise a system so planned that from the very first unfamiliar words come to the student at regular intervals in the course of reading, so spaced that the minimum of learning of word-lists will be required. The student must be able to read easily and quickly so that his mind may spring at once from the foreign words to the ideas without the intervention of the mother-tongue. Further, the matter of the reading-book must be of interest.

The English vocabulary of a sixteen year-old Bengali boy is that of a nine to ten year-old English boy. We cannot expect a sixteen year-old boy to be interested in books written to appeal to one of nine or ten. Still less can we expect the English boy—who begins to study his second language much later than the Bengali—to be interested in French or German books intended for children as much as ten years

¹ The case quoted above, of improvement of reading in one language by practice in another, appears at first sight to be a striking exception. Actually the function measured in both cases is simply Reading.

this juniors. In devising a system for teaching the reading of a foreign language we have therefore to discover a method of producing books corresponding in point of subject and difficulty of ideas to the age of the foreign child, yet written in a vocabulary which is, in point of number of words, the equivalent of that of a native child six to ten years younger.

This problem is solved by building up the vocabulary from the start so that the less words the boy knows the more common (and therefore more useful) those words are. The relative commonness of various English words is shown by certain "Word-frequency lists". By the use of these lists it is possible to construct a vocabulary of maximum usefulness at any given stage of progress. It is found possible, given a fixed standard vocabulary of a few thousand words reasonably well selected on these lines, to rewrite almost any ordinary material of a non-technical nature so that all the words used may be within the standard vocabulary. Thus any ordinary novel can be kept within a 5,000 word vocabulary, and, with a little effort and editing most of the simpler books could be kept within 3,000. Any ordinary fairy story can be written within 300—500 words,—a vocabulary which can be learnt in less than a year's work.

Applying these methods to the work of two experimental classes it was found possible to produce three years' ordinary progress in English reading ability in one year of work or less (so that Class 2 equalled Class 4 and Class 3 equalled Class 5). Moreover the progress in the acquisition of vocabulary also under this method proved to be about one year above the normal.

It is not claimed that the results achieved as set out in the following pages are of a final character; but they are definite and promising. The results of these experiments point out in detail the path of final achievement, and it is believed that these principles can and will in the near future bring forth a method of learning silent reading in English which will appreciably reduce life's handicap for those children whose mother-tongue is one of the minor languages of the world.

ACKNOWLEDGMENT.

I gratefully acknowledge the co-operation in this work of Babu Hem Chandra Banerjee, Mr. Karim Ahmed Khan Lodhi and Babu Sishu Kumar Pal, also the assistance of several of my students in training, whose names are recorded in the footnotes. I am indebted to Babu Aswini Kumar Dutta, Professor of the Training College, for his help in supervising several of the tests and experiments. For facilities I am indebted to Sir Philip Hartog, Vice-Chancellor of the University of Dacca, Mr. C. L. Wrenn, Head of the Department of English, and other members of the University staff, to Mr. A. K. Chanda and Rai S. N. Bhadra, Bahadur, Principals of the two Intermediate Colleges in Dacca, to the Headmasters of High and Middle English schools in Dacca (especially Khan Bahadur Tassadaq Ahmed, Headmaster of the Collegiate School), to Mr. W. F. Papworth, Inspector of European Schools, and the Headmistresses of the European Girls' Schools in Calcutta: I am indebted to Mr. C. L. Wrenn for his assistance in revision of the manuscript, and to Mr. R. W. M. Gibbs for his help in checking the figures and correcting the proofs.

Lastly I acknowledge with gratitude the numerous and very valuable criticisms and suggestions of Sir Philip Hartog.

A brief non-technical account of those aspects of this work which are of more general interest in other countries as well as in India will be found in *Learning to read a Foreign Language* (Longmans Green & Co.). This book contains also an account of the actual construction of some of the reading-books projected in Chapter 10, pages 304-305 below: a further discussion of this work will be issued later.

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April 1926.



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5. An Individual Reading " Profile ".
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SUMMARY¹.

Chapter 1.—The Nature and Origins of the Problem of Bilingualism.

Difference of Language is produced and conserved by the adjustment of language to become a perfect expression of individual or group feeling and experience, and by its special function in differentiating mankind and intensifying the sense of individuality. Unity of Language tends to be produced by the needs of communication; modern commercial, industrial and scientific developments more and more tend to break down linguistic frontiers. Owing to these two conflicting needs mankind tends to become more and more bilingual.

Chapter 2.—The History of the Policy of Bilingualism in Bengal.

The early educational efforts of the East India Company took the form of encouragement of Oriental studies. When the Company first surveyed the problem of popular education it was faced by the difficulty of obtaining teachers and the materials of education in the Vernacular. The materials of a modern education were expressed in English: it was necessary either to translate, or to give to the teacher, and possibly to the pupil also, the power of "deciphering" the books containing the necessary knowledge for himself.

The policy decided upon was based on the theory of Filtration,—*viz.*: an English education was to be given to the upper classes with the idea that they would act as intermediaries, "filtering" modern knowledge from English into the vernacular, and the popular Vernacular system of education.

The policy failed because the inducements offered by English education were so powerful that the Anglo-vernacular system alone flourished, while the Vernacular system (of which the first was intended to be a mere "fountain-head") languished. Moreover in the Anglo-vernacular system the

¹ For an explanation of technical terms used in the Summary, see the Glossary.

vernacular has been persistently neglected in spite of all official efforts to the contrary.

Chapter 3.—Bilingualism and National Culture.

Nationality is the main obstacle to linguistic assimilation. The Bengali fears that the learning of English and the contact with Western culture obtained thereby may displace his own individuality and national culture.

The special value of language in the preservation of the sentiment of nationality depends rather on what language is, than on what it contains. The national language expresses a peculiar store of experience, a peculiar analysis of experience, and, being the language of infancy acquired at the time of the first development of the fundamentals of emotional life, its words possess a peculiar Evocative (or emotional) value, unattainable by those of any second language.

It is obvious therefore that no second language can replace the mother-tongue, nor has any culture acquired through a second language the power to displace the native culture. Renationalisation, even under the most favourable circumstances, for example the absorption of an alien into the surrounding civilisation of America, is ineffective in practice; much more ineffective must be any attempt to import a foreign culture into the midst of a surrounding civilisation. The theory of Renationalization is based upon an obsolete system of psychology, namely the doctrine of the Faculties, a system which, applied to education, neglects the limitation of the teacher by the nature of the taught. The theory of Renationalization by language tends to the fallacy of Word-magic, namely the idea that a word has a fixed connection with its 'referent', and that by acquiring the word one acquires the referent.

It is precisely because the Bengali himself is impregnated with the false doctrine of Renationalization that he fears the contact of Western culture. If he realised the impotence of a second culture to replace that of the mother-tongue, he would be more anxious to acquire what now he covets and yet fears—but he would acquire it in a different way, as a definite fulfilment of a specific need.

The attempt to teach English in Bengal as a vague and general 'culture subject' has resulted in a lack of analysis of the Bengali's precise need of English. The present school'

courses are partly an inheritance from former days, but are in the main merely instances of the Schoolmaster's Generalization of Subjects; they are merely blocks of experience, logically selected irrespective of the specific need or "Project" of the learner.

Chapter 4.—The Advantages and Disadvantages of Bilingualism in the Educational System of Bengal.

There is certainly no advantage in being born in a bilingual country, but rather a disadvantage. The disadvantage lies not so much in being bilingual as in possessing one of the minor languages as one's mother-tongue. Thus the Bengali boy when he has learned English is not so well off as the English boy when he has learned French. The boy who is below the average in educational capacity is at a still greater disadvantage in a bilingual country, since he is compelled to learn a second language where ordinarily he would confine himself to the mother-tongue.

The other disadvantages are inherent rather in the use of the Foreign medium than in Bilingualism. It is not considered a disadvantage for an English boy to have to learn French at a secondary school, but it would be considered a disadvantage if he were compelled to listen to lessons and answer his teacher in French in all the subjects of the curriculum. The Foreign medium is not a necessary part of the bilingualism; on the contrary it is both unnecessary and actually undesirable even for the purpose for which it has been advocated (namely improvement of foreign speech and writing ability).

In the case of the Foreign medium in the language of the textbook the position is different. No actual disadvantages arise from this in respect of production of inaccuracy of diction, "parrot learning," etc. There is, at the maximum, a loss of 10 per cent. per annum of the time allotted to the subject (*viz.*, a loss, in the example chosen, of a quarter of an hour a week). There are very considerable advantages in that the boy has a better textbook for the same money and receives valuable practice in the reading of the foreign language, without which power the whole literature of the subject other than his class textbook is closed to him.

In short if a child's education is bilingual in its Receptive aspect but unilingual in its Expressive aspect, Bilingualism is not necessarily a handicap.

Chapter 5. -An analysis of the Bengali's need of English.

In studying the Bengali's need of English we must distinguish arguments for a second language for boys above the average or for special needs from arguments which apply to all boys and all cases. English in Bengal is not an optional but a compulsory subject, and it is the dominant subject in the school curriculum.

The original reason for introducing the language into the curriculum and the reason for the Bengali's need of it were presumably, identical; and probably are still so. This reason had nothing to do with Commerce, with Inter-provincial Communication, or the Unity of India: it was the insufficiency of the literary content of the Bengali Language for a complete education.

At the beginning of the nineteenth century Bengal had a language and a literature, but the literature had to a large extent been lost, and the language was in a state of corruption. There was practically no Bengali prose, almost no printing, no standard spelling or vocabulary.

The development of printed literature in Bengali during the nineteenth century was very rapid: but even to-day, though the output of literary matter is admirable both as to quantity and excellence, that of technical and informative matter is meagre in amount and poor in quality.

No "small language"—that is, no language spoken by one people only who are a relatively small fraction of the total of literate mankind—can keep pace with the vast variety and complexity of modern knowledge. Thus though Bengali literature has developed very greatly since the beginning of the nineteenth century, the Bengali's need of English remains essentially the same. His essential need is of the ability to read English especially for the purpose of information.

The nature and requirements of the educational system confirm this conclusion from another point of view. There is only one effective system of education in Bengal—the Anglo-vernacular. Hence the Anglo-vernacular schools contain an almost unselected sampling of the whole population, and a large proportion of the pupils leave prematurely without completing the course. It is therefore necessary to design courses of study which may possess a liberal "Surrender Value," and may as far as possible lead to subsequent independent study. Hence in English we must first of all enable the boys to read.

The Reading Bond is, moreover, the easiest of the four Language Bonds. The others, Speech, Hearing and Writing, may be taught later to those who wait for them, are more able to master them, and more likely to need them.

An objection may be made to this argument that such separation of the language bonds is logical rather than psychological. This objection is not supported by theory or by fact. The existence of reading ability apart from speech ability, or greatly disproportionate to speech ability is a comparatively common phenomenon.

It may further be objected that a course in reading must be preceded by a course in pronunciation, otherwise the reader may use a grotesquely wrong scheme of sounds, which will interfere with his appreciation, and be a handicap to him should he later proceed to acquire speech ability. . . Mispronunciation may be due to Ignorance, as in cases of wrong accent, or to Lack of Skill. The former type of error may easily be avoided in the process of learning to read; the second is due to the absence of equivalent sounds in the repertory of the mother-tongue. Since the Bengali boy is not going to be one among many Englishmen, but one among many Bengalis, he is entitled to his own dialect, so long as it is consistent and intelligible. Those likely to have intercourse with non-Bengalis (and these are few) may, without essential modification of these proposals, acquire a pronunciation correct according to English standards.

In order to develop these proposals in detail and render them practicable we require knowledge of the actual present conditions and of what improvement is possible.

The following points are to be explored in detail:—

1. What is the Bengali's present actual reading ability at various stages?
2. In what way and to what extent can reading ability be improved in those who already possess a sufficient vocabulary?
3. What is the English vocabulary of the Bengali at the various stages?
4. What should that vocabulary enable the boy to read (given the reading ability)?
5. In what way and at what rate of progress can ability in silent reading in English be produced, starting from a zero knowledge of English?

Chapter 6.—The Measurement of the Silent Reading ability in English of Bengali students.

For a general estimate of the silent reading ability in English of the Bengali student the test devised (C.B. II)¹ was based on a simple story, which presented no difficulties of vocabulary or comprehension. The student was required to underline the answers to certain questions presented to him beforehand. Great care was taken to make the directions clear to all so that these might not influence the scores. Seventy-five per cent. "Comprehension" was required for qualifying, and the score was Time. This is probably a fairly 'pure' test of Reading: it has a high stimulus value so that children do their best at it. Its reliability is high. Its disadvantage is that, being purposely a test rather of word by word reading than of skimming or scanning, in that the questions cover the matter closely, it does not yield sufficient opportunity to the practised reader of showing his full superiority. For purposes of a general survey of readers who have not been specially practised it is, however, satisfactory. In addition to this test an adaptation of Monroe's Kansas Test was used.

Comparing the results of the C. B. II Test applied to Bengali boys and to Anglo-Indian girls, and the results of Kansas I applied to Bengali boys and to American children (grade norms being converted by McCall's table into ages) the following result is obtained:—

Bengali grade.	Nominal age.	Nearest equivalent C. B. II age norm, Anglo-Indian Girls.	Nearest equivalent age norm Kansas I, American children.
M.A.	21	16	..
B.A.	19	14	..
Inter II.	18	13	11-2
Inter I.	17	12	10-8
Class X (Metric class)	16	10	10-2
Class IX	15	..	9-7
Class VIII	14	..	..

TABLE.—Age comparison of Bengali boys, Anglo-Indian girls, and American children in respect of English Reading.*

¹ The full title of the test is "Chandra Bai and Ratna Bai, Part II." It is, for convenience, commonly referred to in the following pages as "C. B. II."

* It is necessary to emphasise that these figures refer only to simple Reading Ability in English: they state and imply nothing in regard to natural Intelligence.

In addition to the above tests certain other tests were devised for the special purpose of measuring the improvement of practice classes. A pair of tests of low question-density was devised in order to indicate the full amount of improvement more satisfactorily than is done by C. B. II—III.

An investigation of speed in relation to density showed that as question-density is decreased, at a certain point a sudden change in the type of reaction of the student appears to take place. It is not possible therefore to compare the results of tests of widely differing question-density.

In order to discover whether practice with "Before-questions" is "transferred" to a situation involving "After-questions," an After-question Test was devised, in which the student is informed beforehand as to the question-density to be expected.

Chapter 7.—The Improvement of Silent Reading ability in English in Bengali students.

The purpose of these experiments was to determine by what means and to what extent the English Reading ability of Bengali Intermediate students could be improved.

Three experiments were made. In the first and second it was found that the tests used, owing to their question-density, did not show the full amount of improvement as indicated by the class records. For the third experiment tests of lower density were devised. The three experiments go to show that even in so short a practice period (16 days) a very marked improvement can be effected. The result is to bring Bengali Intermediate students from a standard equivalent (on C.B. Test) to Anglo-Indian age 9—13 to a standard equivalent to age 12—18, Anglo-Indian girls, or, on Bengali norms, a standard superior to that of the M. A. Class, a gain of four years in three weeks.

This improvement is not due to increase of skill in the same function but to the replacement of the childish type of reading by the adult type.

It appears that Before-questions are an effective method of training, and that their practice-effect is transferred to an After-question test.

The practice effect in English reading is transferred to Bengali reading. This appears to indicate that the defect of the Bengali is a general defect in reading ability rather than

a specific defect as regards English. This is what would be expected in view of the rather meagre amount of reading of the average Bengali student. The root cause of this condition lies probably in the wrong attitude towards language study shown in the curricula and examinations, over-emphasising expression. The Receptive aspect of language, the art of reading, is neither taught nor tested.

Chapter 8.—The English Vocabulary of a Bengali boy.

The first attempt to measure the English Vocabulary of Bengali boys followed the lines of Henmon as regards selection of words, and employed the synonym method, later used by Thorndike, as regards indication of meaning. This test was abandoned because it showed unreliability due to boredom, owing to the large number of words presented in the method of response.

The second test (omitting an abortive experiment with Terman's list) adopted the method of written vernacular meanings, and consisted of a Preliminary Grading Test, and a second Detailed Test, a portion only of which was to be set in each case according to the result of the preliminary test. This method appears to be sound, but it is too complicated for the particular purpose, *viz*: a general estimate of the size of the vocabulary of various school grades, though excellent for an individual examination.

The third and final test consisted of two parts, each containing seventy words, selected as in the previous test to represent various stages of the Thorndike Word List, and multiplied by factors corresponding to the percentage of the sample. The two parts were distributed alternately to prevent copying. The test was applied to 800 cases, and the correlation of the two parts is high.

Comparing the results (*i.e.*, the mean score of the two parts) with the data supplied by various studies of the English vocabulary of English children, it is found that at the Matriculation grade in Bengal the English vocabulary corresponds to that of an English boy aged $9\frac{1}{2}$ years.

At the rate of progress in the acquisition of an English vocabulary revealed by this test, there must inevitably be a discrepancy of from $6\frac{1}{2}$ to $9\frac{1}{2}$ years between the extent of the English vocabulary of an English and of a Bengali boy.

Mere " number of words " does not however convey much. We have to enquire what a given number of words enables their possessor to read. Examining this point we find that the Bengali boy of the Matriculation class would be able to read, without excessive difficulty in respect of vocabulary, books which would appeal to the English boy aged about nine or ten.

In this Age Discrepancy in vocabulary (*viz*: the fact that a student of a foreign language is condemned by the limitation of his vocabulary to read books greatly below his mental age as regards their substance) lies the fundamental difficulty in the problem of creating reading power in a foreign language.

If the words of the student's vocabulary are so selected as to be words of maximum frequency, and so of maximum utility, the difficulty can be reduced. Furthermore if a known and standard vocabulary be built up in the school course, it will be possible to write books for practice and leisure reading in which the ingress of unfamiliar words is under strict control.

The Calcutta University Commission has emphasised the great importance and value of out-of-class reading, but the books at present provided, though nominally simplified, in respect of vocabulary do not show signs of any useful adaptation to the needs of the Indian student.

It is a comparatively easy matter to bring the vocabulary of any ordinary narrative matter within the limits of a standard vocabulary, nor are the necessary alterations very perceptible, save at the lowest vocabulary levels (1000 words and under).

Chapter 2.—The Teaching of English Reading to Bengali boy:.

The importance of experiment in the method of producing silent reading ability in a foreign language is emphasised by a recent report of the Board of Education and by most writers on the method of foreign language teaching.

It does not appear that active power over the language is a necessary preliminary. Existing methods of language teaching are therefore inapplicable; it is necessary to evolve a new procedure.

The purpose of the First Experimental Class was to evolve a form of procedure which would, given a class already knowing

the alphabet, and given the reading materials available in the market, supply efficient practice in English reading.

The difficulty which immediately presented itself was the treatment of unfamiliar words. So far as was possible the teacher anticipated what words would be unfamiliar and taught them in advance, but correct prediction was not always possible, and as a result of the failure of this procedure to allow sufficiently for such unpredicted words, during the first term the Experimental Class showed no improvement over the group of pupils used as a 'Control.'

Improvement of the procedure in this respect resulted in a considerable gain; but it was obvious that the main obstacle to further progress lay in the reading material, in which no attempt has been made to grade or control the vocabulary.

Before a second teaching experiment could be initiated, a detailed examination was made of the defects of existing English reading material in common use in Bengal. A series of "Criteria" was evolved which might act as a standard both in judging existing matter and in constructing new.

With the aid of the results of this survey a series of reading-books was specially constructed to cover the first year's work in English.

The Second and Third Experimental Classes were conducted with this material. The standard used for comparison was the result of periodic tests of the various classes of the best Government High School in this half of the province. The class chosen for the second experiment was Class II of one of the weakest Middle Schools in the town; this choice was made in order to obtain a class having as little initial knowledge of English as possible. This selection subsequently gave rise to certain unexpected difficulties, *viz*: the boys were not only backward in English but were backward in general mental development and were unable to read the vernacular efficiently. In order that the English work might proceed, this defect had to be remedied Some of the boys in the class were of so low a degree of intelligence as to be almost unteachable even in the mother-tongue.

In spite of these difficulties, on the completion of the first reader (sixteen weeks, 77 working days) the results of the tests were equal to those of Class III of the school selected as the criterion. After completing the Revision Exercises (5 days later) which were designed to give special practice in

dealing with more varied types of 'reading-situation', the results were mid-way between Classes IV and V, a gain of two and a half years in seventeen weeks.

The Third Experimental class was a Class III of the Practising High School of the Training College. Starting in July with almost zero reading ability the results of their tests made early in September were midway between Classes V and VI of the selected school, a similar gain of $2\frac{1}{2}$ years but accomplished in a shorter time, (*viz*: 10 weeks, 50 working days), the difference being due to the fact that this class knew the alphabet, and was both of higher average intelligence and of more equal quality.

Chapter 10.—The Teaching of English Reading to Bengali boys. (concluded.)

The whole course of experimental teaching was completed by Class II in 141, by Class III in 94 days. It was observed that vocalization and lip movement automatically decreased with the increase of facility. Individual investigation showed that 53 per cent. of the Class III were reading using the direct bond. A warning was given against translating, and shortly afterwards all except 16 per cent. (very backward boys) were reading with the direct bond.

Ideally a Bengali boy of ten years old should, within his vocabulary, read English with the same facility as an English child of the same age.—(and so with other ages). The idea underlying the construction of the End-tests for these two experiments was to test how far this ideal had been achieved or could be achieved in future stages of the work. (At the present stage the classes were too young for the scores of many of the boys to fall within the norms of the tests). The Kansas Test and the C. B. 2 test were therefore re-written so as to contain no words outside the vocabulary of the experimental classes. It does not appear that this has very appreciably affected the norms of the Kansas test; the effect on C. B. 2 is as yet uncertain.

Simultaneously with the testing of the experimental classes a test was made of the Collegiate school (the best school in the town) and the Armenitola School (the practising school of the Training College to which the third Experimental Class belonged). The net result of a comparison of the test results of the two experimental classes with the scores of the classes

of these two schools was to indicate a gain of two years in respect of Reading, (that is, Class III was equal to Class V, and Class II to Class IV)—and of one year in respect of Vocabulary.

In reference to the question of the "Surrender Value" of English teaching discussed in Chapter V above, it appears from these experiments possible to give such reading ability in English as constitutes a permanent, usable and improvable possession within one year to about 40 per cent. and within two years to eighty per cent. of an average class of Bengali boys.

A point of some theoretical interest is that ideas gained in reading a foreign language appear to be peculiarly evanescent and that the size of the Unit of Reading must be proportionately reduced in books used for reading in a foreign language.

The experiments have indicated various defects and various lines along which further improvement may be sought in the material used (which was itself explicitly experimental).

This material will now have to be reconstructed *ab initio*.

BILINGUALISM.

PART I—DISCUSSION.

CHAPTER I.

The Nature and Origins of the Problem of Bilingualism.

DEFINITION OF THE PROBLEM.

The problem of Bilingualism, or Multilingualism, arises when two or more languages are used in the same political or educational unit. Dr. W. J. Viljeon¹ makes it a cardinal principle that the problem should be regarded as educational and that politics should be excluded from it. This is theoretically sound, for the forces which give rise to Multilingualism are mainly political in their nature, whereas the forces which work in the opposite direction, which tend to produce uniformity of language, are mainly educational.

In all cases of Multilingualism the various languages tend to fulfil different functions, but these different functions are a part of the life of all or of a large part of the population. In the more acute cases the language division is such that all classes require more than one language; in less acute cases a second language is necessary only to the upper classes whose political, professional, or industrial duties are more specialised than those of the common population. In the typical case the first language is the vehicle of thoughts about the home life, and perhaps of a literature expressive of emotions and ideas connected with the home; while the second language is a vehicle of communication for matters of government, commerce, industry, scientific thought and higher culture generally. There may be a third language which is a medium of communication for international relations and higher education, and a fourth necessary for the religion and ancient culture of the people. Thus for the Afrikaner Afrikaans, the first language, is the medium of thought and emotion for the home life, while English is necessary for industry, commerce and higher education. The Bengali Hindu is in a similar case in respect of Bengali and English, but he needs also Sanskrit

¹ Speech at the Imperial Education Conference, June 1923.

for the full understanding of his ancient tradition and religion. The Magh has Maghi as his Home language; he needs Bengali for local commerce, English for higher education and administration, Burmese for his ancient traditions and literature.

It is obvious that the acuteness of any multilingual problem will depend on the nature of the languages involved. Languages are of widely different cultural values. "Compare the advantage of being able to talk with the inhabitants of the Fiji Islands in their own language with the advantage of being conversant with French or German."¹ Regarding bilingualism from this aspect of advantage we may predict that the educated Fiji Islander will necessarily be bilingual, whereas the educated Frenchman or German may be unilingual. It is possible, of course, for multilingual conditions to exist in respect of languages of equal culture-value, *e.g.*, French and German in the border departments, yet here also there is the tendency for the languages to specialise, and even in the highly artificial case quoted by Ronjat² the two languages are at no point really equal in their development or interchangeable.

The Distribution of the Problem.

Schmidt³ points out how widely distributed is the phenomenon of multilingualism; he instances Africa, America, Belgium, Canada, India, Ireland, Poland, Switzerland, Wales.

In the light of the argument of the preceding paragraphs, it should be difficult to quote any country which is entirely free from the problem. A people can be entirely unilingual only if its language entirely suffices for its needs. The two people most nearly approaching to this condition would be a homogeneous tribe at an extremely low level of culture, and an English-speaking people. The first people have no need of commerce, of higher education, no demand for a literature wider than the local tribal legends. The second people are using the language which is the most widely distributed over the face of the world; the language of the largest number of books and printing presses in the world, the language which the majority of non-English speaking peoples find it most profi-

¹ Jespersen, O., "How to Teach a Foreign Language," 1917, page 5.

² Ronjat, J., *Le développement du langage observé chez un enfant bilingue*, 1913, pages 7-10 and page 75.

³ Schmidt, C. H., "Language and Thought," an unpublished thesis for the B. Litt., Oxford, 1923.

table to learn.¹ Yet the British Government's committee on Modern Studies bears witness to the insufficiency of English itself:—"No country can afford to rely on its domestic stores of knowledge. In science, technical and pure, in history, antiquities, law, politics, economics, philosophy, new researches are constantly leading to new discoveries, new and fruitful ideas are giving new pointers to thought, new applications of the old principles are being made, old stores are being rearranged classified and made available for new purposes. In this work all the civilised countries of the world collaborate, and in no branch of knowledge, abstract or concrete, disinterested or applied to the uses of man, can the specialist neglect the work of foreign students."²

Under the conditions of modern life almost every man is a specialist.

FACTORS WHICH TEND TO PRODUCE DIFFERENCE OF LANGUAGE.

1. *The Need of Expression.*

Language fulfils two needs, the Need to Express, and the Need to Communicate. In the subjective aspect man desires to give voice to his feelings in the speech which yields to them fullest utterance, in the speech nearest to his own heart; he requires therefore a form of expression perfectly moulded to the nature and manner of his thought and feeling. Hence every individual man tends to adjust language to himself; no two men using the same language possess exactly the same vocabulary, use precisely the same sentence forms and idioms,

¹ "At the request of the Northern Peace Congress which met in Stockholm in 1919 the Northern Peace Union addressed an enquiry to representatives of countries where none of three great languages (English, German and French) are spoken, as to which was in their opinion the most suitable language for universal use. Fifty-four replies were received. Of these one was in favour of German, eight of French, one Latin or Spanish, 5 Ido or Esperanto. No less than 29, a majority of the whole, were in favour of English."—*The Teaching of English in England*. H. M. Report, 1921, page 67. "English is not merely an indispensable handmaid without whose assistance neither philosopher, chemist nor classical scholar can do his work properly. It is one of the greatest subjects to which a university can call its students. Never was that more so than at this moment, when English is nearer than ever before to becoming a universally known language. The conditions created by the War have spread our language over the five Continents of the earth. It has long been the best known European language in Asia and Africa, North America and Australia; it is likely to become so more and more; and in Europe, as we are told, it is now in the majority of countries the language most frequently learnt in addition to the mother-tongue." *Ibid*, page 200.

² *Modern Studies*, H. M. Report, 1918, page 30.

give to their words precisely the same connotations. Every family¹ has certain peculiarities of expression, adjustments of the tribal language to be a more perfect vehicle of its peculiar fund of experience. Similarly in every social unit, where there is a stock of experience peculiar to and common to the members of that unit, there is an adjustment of language to be the especially apt expression of that experience. We may imagine in the origins of the human race the individual family or section of a family developing its own differentiation of the tribal language², growing into a tribe and developing its own differentiated tribal language containing many family differences, which in turn grow into tribal languages; and so on *ad infinitum*.

2. *The Need of a Sense of Individuality.*

Language is adjusted to individual needs of self-expression; this is a sub-conscious process, for in so far as a man is different from others he will naturally tend to speak differently from others. But there is another and more subtle type of differentiation in language—namely the differentiation of language in the small group or clique.

Man's individual soul is a naked, sensitive thing, intensely conscious of itself. A man hates to be herded, indexed, treated as an interchangeable unit. The prisoner of war and the schoolboy are so treated—as one among many; this is their hardship worse than solitude. A man may be driven mad by solitude, but neurosis may be produced even more rapidly and more surely by being one of a crowd:—"Oh only to be out of this crowded desert, just for ten minutes to be on a solitary storm-tossed mountain-top, on the chilliest glacier, in a mad whirlwind—anywhere, even where danger lies, to be away from the sight and the sound and the smell of mankind, and to be able to think one's own thoughts."³

¹ "There is a certain exuberance which will not rest contented with traditional expressions but finds amusement in the creation and propagation of new words and in attaching new meanings to old words. We find it in the wealth of pet names which lovers have for each other and mothers for their children, in the nicknames of schoolboys and pals of later life, as well as in the perversions of ordinary words which at times become the fashion among small sets of people who are constantly thrown together and have plenty of spare time." (Regarding this last point, "small sets of people," see the next paragraph below, "The Need of a Sense of Individuality.") Jespersen, O., *Language*, 1922, page 298.

² Ripley, W. L., *The Races of Europe*, 1899, page 480.

³ *Lager Echo*, Journal of Civilian Prisoners' Camp, Knockaloe, No 9. 1917.

This is strangely reminiscent of boarding school life.¹ There is in the boarding school a sense of loss of individuality because nothing is private; one dresses oneself, bathes, eats, prays—all in public. "One sleeps, one dresses oneself, one eats, plays, walks, does one's duty, dreams, gets angry, or sentimental, isolates oneself within oneself—and all in company."² The essence of Barbed Wire Disease³ is this sense of loss of individuality.

A man wishes to feel that he is himself, that he is different from every other man, and he wishes that this difference should be recognised by others; but the school and the prison camp—and our too much organised world generally—persist in neglecting just those differences which the individual emphasises, persist in emphasising just those samenesses which the individual would like to forget.

Now a difference which is found in one case only may be neglected as of no account or overruled as an individual eccentricity; but a difference from the general herd which is common to two or three or more persons must be acknowledged as a definite phenomenon. A small group of persons (a clique) may thus—by agreeing to resemble each other—assert their difference from the common herd, and protect their individuality.⁴ By resembling each other they emphasise their difference from the rest: yet at the same time the group itself is sufficiently small for the individuality and personal difference (in other respects) of each of the members to be recognised. If it is not sufficiently small for this purpose, another sub-grouping will be formed within it. Thus there comes into being a hierarchy of groups, like a Chinese puzzle-box, each smaller than that which contains it, until we reach that point, the little local club, in which the common man can find himself and know that he is known.

The small group is the natural protection of the individual soul, and the small language or dialect is the natural and most important distinguishing feature of the small group. Any-

¹ Walpole, Hugh, "Mr. Perrin and Mr. Traill," 1911, *passim*, e.g., page 74.

² Riou, Gaston, "Journal d'un simple soldat," 1916.

³ Vischer, A. L., *Barbed Wire Disease*, translated by Kinnier Wilson, S. A., 1919. The quotations from the journals of prisoners' camps are taken from this interesting and valuable work. On the more general aspects of the case, see Freud, S., *Group Psychology and the Analysis of the Ego*, 1922, page 5.

⁴ "One would say that once men are grouped together they take advantage of the most trifling circumstances to assert one special group consciousness against another." Vendryes, J., *Language*, transl. Radin, P., 1925, page 240.

thing which, while common to the group, tends to differentiate it from other groups, tends to intensify the sense of solidarity and of distinctness. Of all instruments for the intensification of group individuality, language is undoubtedly the most powerful. Hence arise the social Shibboleth of the upper classes, Public School slang, sectarian cant; hence also the revival of obsolete national and tribal languages.¹ The apparently useless conservation or even revival of multitudinous obsolete dialects and national languages is a symptom of man's natural tendency to form small groups as safeguards for his individuality. The statements "I am a Welshman," "I am a Cornishman" (etc.) are expressions of a desire to be different; they give a satisfying sense of distinctness—"Do not confuse me with the common herd." To emphasise and to conserve that group boundary, the local language or dialect is jealousy preserved or painfully resuscitated.

We find therefore two motives which lead to differentiation of language—

- (1) The adjustment of language to become a perfect expression of individual experience.
- (2) The use of language as a means for preserving and intensifying individuality in group differences.

THE UNIFYING FACTORS.

Language arises from a Need for Expression, and from a Need for Communication. The Need for Expression tends to produce differentiation of language; the Need for Communication requires uniformity of language. Modern industrial organisation demands the elimination of provincial and national boundaries: the whole world has become one vast interdependent commercial organisation, a "Great Society."² As regards its material interests and the means of supplying them the whole world is one: it is only linguistic barriers and

¹ Vendryes instances the Breton language:—"It is a ready-made, special language which serves to safeguard their independence." Vendryes, J., *Language*, transl. Radin, P., 1925, page 286.

² Graham Wallas, *The Great Society*, 1914, page 6:—"During the last hundred years the conditions of civilised life have been transformed by a series of inventions which have abolished the old limits to the creation of mechanical force, the carriage of men and goods and the communication by written and by spoken word. One effect of this transformation is a general change of the social scale. Men find themselves working and thinking and feeling in relation to an environment which, both in its world-wide extension and its intimate connection with all sides of human existence, is without precedent in the history of the world."

the artificial boundaries of tribal feeling that separate. The greater the enlargement, complexity and organisation of this world-society of industry, the greater will be the need for the abolition of the multitudinous 'changes of gauge' at unnecessary linguistic frontiers. Yet the greater the enlargement, complexity and organisation of this world-society of industry, the greater is the need of preserving through small groups and local patriotisms man's individual soul. The effect of the Great War and its aftermath has been to let loose an unprecedented number of new national languages into the Babel of mankind.

BILINGUALISM TENDS NOT TO DECREASE, BUT TO INCREASE.

The problem of Multilingualism is no new problem: all that is new in it is the post-war realisation that the problem is not solving itself: on the contrary it is becoming more acute. The post-Napoleonic world-settlement was based on an assumption of mutability of culture¹, on the assumption that a change of frontier could change a language. In no single instance has that hope been fulfilled. Keane² quotes half a page of instances in the history of man in which tribal change of language has occurred; only one instance is recent (the Ahoms of Assam). Whereas Jordan³ finds that in Americanized subjects, where every influence combines to effect a change, the original language persists as the home language even after fifty years of residence in America and even in the second generation. The settlement of the Great War is based on a realisation of the failure of the Congress of Vienna; it is a surrender to multilingualism.

Man's psychological need demands small groups preserved by differences of language; his scientific and economic needs demand a world-wide uniformity of speech.

The educationist has the choice of the language of the pupil, or the language of the knowledge to be imparted; and whichever he chooses, in leaving the other, he is bound to be wrong.

But the dilemma can perhaps be turned.

¹ *Of*. Tom Paine, "The World is my Country; Mankind are all my brothers." (Quoted by Zangwill, I., *Principles of Nationalism*, 1917.)

² Keane, A. H., *Ethnology*, 1896, page 202.

³ Jordan, R. H., Retention of Foreign Language in the homo, *Journal of Educational Research*, III/I/, Jan., 1921.

CHAPTER 2.

The History of the Policy of Bilingualism in Bengal.

The East India Company in its first educational efforts pursued the line of least resistance and encouraged the form of education already existing in the country, namely that provided in the *Tols* and the *Madrassas*, institutions for the study of ancient languages,—for example the Calcutta Madrassa, the Benares Hindu Sanskrit College, the Calcutta Sanskrit College.

THE BEGINNINGS OF POPULAR EDUCATION.

The work of founding common vernacular schools for the education of the people was confined to missionaries (*e.g.*, Schwartz in Tanjore, Kiernander at Cuddalore, Marshman and May in Bengal).

The first recognition of this type of work by the Home-Government took the form of a grant in 1832 to the Calcutta School Society (founded 1819).¹ But the Company felt uneasy about the matter and realised that more ought to be done. Then, as in more recent days, this uneasiness took the form of "Surveys." Various surveys were made (Fisher in Madras, 1827,—Wilson in Bengal, 1831,—and Adam in Bengal, 1835). These revealed in general a decay of education, and emphasised the fact that the root of the difficulty lay in the schoolmaster. It is not possible to start schools without teachers; and competent teachers were not available. "A great delay in the establishing of schools in this Presidency" says Mr. Secretary Farish² referring to Bombay, but the situation in Bengal was not different, "has arisen from the necessity of educating the school-master in the first instance." Whence were the teachers to come? If products of the *pathsala* (indigenous primary school) went back to the *pathsala*, there would be no improvement. The only other source would be the *Madrassa* and the Sanskrit College; but *Pandits* and *Moulavies* could not be set to teach infants in primary schools. There was no alternative but the Training

¹ Howell, A. P., *Education in British India*, 1872, page 13.

² Sharp, H., *Selections from Educational Records*, 1920, Vol. I, page 49.

School, an idea enunciated by the Court of Directors of the East India Company to the Governor General in Council of Bengal.¹ But the Training School alone would not solve the problem; the Directors realised that the education of the masses requires the existence of an educated class as a fountain-head of culture. "The improvements in education which most effectively contribute to elevate the moral and intellectual condition of the people, are those which concern the education of the higher classes, of persons possessing leisure and natural influence over the minds of their countrymen. By raising the standard of instruction among these classes, you would eventually produce a much greater and more beneficial change in the ideas and feelings of the community than you can hope to produce by acting directly on the more numerous class."² Moreover the small sums available might, concentrated on the "fountain-head," produce some effect, while scattered over the vast masses of the populace they would be inappreciable, a mere "frittering away of the sums allotted for educational purposes upon . . . elementary schools and eleemosynary scholars."³ This last is a reference to the stipendiary students of the Sanskrit Colleges and *Madrassas* (and perhaps of the Training Schools also).

Thus the authorities began by patronising the ancient forms of learning: they then awoke to the illiteracy of the masses; set out to establish common schools,—and "recoiled at the magnitude of the task."⁴

THE BEGINNINGS OF ENGLISH EDUCATION.

If the production of an educated class was the pre-requisite for the establishment of a system of popular education, it was obviously idle to give to that class the purely academic training of the Sanskrit *Tol* and the *Madrassa*. This was the opinion of the Missions, and of advanced Indians such as the members of the *Brahmo-Somaj*: whereas the attempt to graft modern studies on to the ancient curriculum seemed to all obviously doomed to failure.

There was thus no room for compromise. A modern education must be an English education, in idea, and in language

¹ Selections, I, page 50.

² Selections, I, page 51.

³ Selections, I, page 52.

⁴ Selections, I, page 77.

also,—in language also, because it is useless to give mere knowledge without the means of obtaining more. This fundamental point was emphasised by Grant, the earliest advocate of the English medium. In 1792 he published a treatise entitled “Observations on the State of Society among the Asiatic subjects of Great Britain, particularly with respect to morals,” and on the means of Improving it.”¹ Grant’s proposals were somewhat impracticable and they had little effect; yet he mentions the following important point:—“The acquisition of a foreign language is, to men of cultivated minds, a matter of no great difficulty. English teachers could therefore be sooner qualified to offer instruction in the native languages than the Indians could be prepared to receive it in ours.” (This might almost be a paraphrase of some of the evidence before the Calcutta University Commission 1917-19).² “This method would hence come into operation more speedily than the other; and it would be attended with more careful selection of the matter of instruction. But it would be far more confined and less effectual. It may be termed a species of deciphering. The decipherer is required to unfold in intelligible language what was before hidden. Upon every new occasion he has a similar labour to perform, and the information obtained from him is limited to the single communication then made. All other writings in the same character remain, to those who are ignorant of it, unknown; but if they are taught the character itself, they can at once read every writing in which it is used.”

We have here the first, and perhaps still the best, expression of the most potent argument against the vernacular medium. Any given course, so far as its bare textbooks and lectures are concerned, can be translated into the vernacular, but as an education the course is “Thus far and no further”: all that lies beyond and beside remains hidden. There can be no outside reading, no exploration of side-paths, no continuation of study after the course is finished. In fact just what distinguishes an Oxford Honours School from a “Correspondence Course,” just that is inevitably missing from an

¹ Quoted by Sharp (op. cit., page 81) from Report of the Committee of the House of Commons on the affairs of the East India Company, 16th August 1832, Appendix I, pages 82—87.

² Calcutta University Commission Report, X, page 503:—“It is cheaper to pay an Englishman his salary for two years while he learns the language of the country than to pay for the whole educational system for two years while the pupils learn oral English.”

education through the vernacular medium. Grant's treatise is interesting in this also, in his emphasis of the importance of the *receptive* aspect of English. "The first communication and the instrument of introducing all the rest must be the English language: this is a key which will open to them a world of new ideas." He advocates the teaching of the English language not as a means of expression or of inter-communication, but as a key to knowledge, and it is on this point that the argument of the subsequent Anglicists throughout is based.

The initial efforts in English education were made by the missionaries and by private individuals. The Anglo-Indian College was founded in 1817, the Baptist Mission College at Serampur in 1818. Bishops College (Calcutta) in 1820.

In 1821 the *Sanskrit College* was founded in Calcutta by the Government; it was intended to combine Western and Eastern learning; but at first the courses were confined to oriental subjects. "A set of mechanical apparatus and complete whirling table" were transmitted to the College by the British Indian Society, and an attempt was made to introduce Popular Science classes. The innovation does not seem to have been very successful: it was opposed by the conservative element, and the General Committee of Public Instruction write in reporting on the result of the experiment that, "The actual state of public feeling is therefore, we conceive, still an impediment to any general introduction of Western literature or science. . . . We must at present go with the tide of popular prejudice."¹

If one section of Indian opinion was opposed to modern studies, another was strongly in favour of them, and conscious of the deficiencies of the ancient form of education. Ram Mohan Roy, an influential leader of the reformers, protests most earnestly against the obsolete curriculum of the "Sangserit School," "a seminary (similar in character to those which existed in Europe before the time of Lord Bacon)" which could "only be expected to load the minds of youth with grammatical niceties and metaphysical distinctions of little or no practical use to the possessors or to society."²

¹ Letter, dated August 18th, 1824. Selections from Educational Records, Vol. I, pages 95, 98.

² Selections, I, page 99.

THE ANGLO-ORIENTALIST CONTROVERSY.

The question of the Sanskrit College brought controversy to a head. Previously the two types of school had existed more or less peacefully side by side; now the Committee of Public Instruction itself was divided. J. C. Sutherland, the Secretary of the Committee, refers to "recurring and inconvenient discussions" and Messrs. Bird, Saunders, Bushby, Colvin, Trevelyan are mentioned as holding "views opposed to the rest of the Committee,"—(Shakespeare, H. Prinsep, Macnaughten, J. Prinsep and Sutherland).

A letter dated January 22nd, 1835, from the General Committee was the occasion of Macaulay's famous Minute, to which, H. Prinsep replies emphasising the legal aspect of the case, that the use of the funds for English instruction is not in accordance with the Act (53 George III) under which the provision of funds was made. Macaulay makes a note in the margin quoting Sir. E. Ryan. Prinsep replies that he does not "feel overwhelmed by the authority." He examines Macaulay's examples, of Egypt and Russia, and points out that Russia has obtained its culture from Europe by translation, not by adoption of a foreign language. Macaulay dissents in the margin—that the Russians learned English, French, etc., and are now beginning to translate—"exactly the course which I hope and trust that the educated class of our own native subjects will follow." Macaulay had made the point that students of Sanskrit and Arabic receive stipends, that they are paid to learn. Prinsep is sensitive on the subject and replies at length,—with numerous marginal dissents from Macaulay. Incidentally Prinsep asserts that the philosophy of Locke and Newton grew from that of Arabic and Sanskrit: Bethune is provoked by this to the marginal note, "Monstrous Assertion!"

Feelings were high, and Lord William Bentinck's Resolution was not calculated to allay the controversy. By going too far in the Anglicist direction, he gave a handle to the Orientalists: stipends to Sanskrit students might in some cases be considered as being in the nature of "Research Scholarships" and were, at any rate, the custom of the country: a limitation of them to bona fide advanced students would have sufficed. Again, if the printing of translations of Hutton's *Geometry* and Hooper's *Vade Mecum* into Sanskrit were perhaps not very useful undertakings, on the other hand

the printing of *Fatawa Alamgiri* was an attempt to make a valuable work more accessible.¹

As a consequence of Lord William Bentinck's declaration of policy the Committee of Public Instruction proceeded to arrange for the establishment of English Schools at Dacca and Patna. At the same time a conciliatory series of resolutions was adopted by the Committee postponing the appointment of Secretaries for the purpose of reorganising the Sanskrit Colleges, and permitting the completion of the printing of *Fatawa Alamgiri*.

Lord Auckland, who succeeded Lord William Bentinck as Governor-General, published a Resolution reviewing the situation, guaranteeing the maintenance of oriental institutions, the foundation of English teaching institutions, and advocating translations into the vernacular for the use of the vernacular classes in Zilla Schools. This judicious Resolution did much to allay the controversy; it was approved by the Court of Directors in their Despatch of January 20th, 1841. Both the Despatch and Lord Auckland's Resolution are so judicious that, though they mitigated the controversy, they actually did little to solve the problem. The Despatch approves of continuing oriental studies, approves of disseminating western learning, but "forbears from expressing any opinion regarding the most efficient mode of communicating and disseminating European knowledge" whether by "engrafting on the studies of the existing learned classes" or by English teaching, or by translation into the vernacular.²

Thus the discussion was by no means closed in 1841. In 1842 F. Boutros, in his "Enquiry into the system of Education most likely to be generally popular in Behar and the Upper Provinces"³ suggests that the reaction from Oriental studies to English had been too violent; he advocates the teaching of English as a language, and the use of the vernacular medium for all other subjects. Colonel Jervis (1847) proposes that education in Civil Engineering in Bombay should

¹ Sutherland, J. C., in his 2174 April 1835, from the Committee of Public Instruction to the Government of India (Sharp, II., op. cit., page 140) mentions amongst books for printing Kalidasa's *Naishadha*. *Naishadha* is not by Kalidasa, but by Sree Harsha; vide MacDonell, A. A., *Sanskrit Literature*, 1909, page 330. Enquiry of the Education, Health and Lands Department of the Government of India shows that this error is in the original document. Anyhow it was not a very useful book to print, save as a textbook for the *Tols*.

² Richey, J. A., *Selections from Educational Records*, 1922, Vol. II page 4.

³ *Selections*, Vol. II, page 5.

be given in the vernacular; Sir A. E. Perry replies in a minute that such a proposal is impracticable, first because the public would not allow nor accept it, and secondly because there was no one available to make the necessary translations into the vernacular. The Government of Bombay in a letter to the Board of Education considers that the difficulty of translation is exaggerated and that, while English education should be continued, the main effort ought to be directed towards vernacular education, because only through the vernacular could the masses be reached, and because the students would learn better in the vernacular. Sir. E. Perry replies that the main object of Government is to make possible the "high employment of natives," and that the only reasonable means to this end is to give to the more gifted members of the upper classes the best English education available; further that the first essential for a vernacular system is efficient schoolmasters, and that for this purpose an English education is necessary. (Thus the argument of Grant recurs). J. P. Willoughby quotes Elphinstone and argues that translations could be made, that lower education should be given through the vernacular, higher education through English, that the determination of the point of transition will depend on the wealth of translations in the vernacular. Bethune emphasises the importance of making Indian students of English education study their own vernacular, considers that only by direct contact with English ideas can a body of enlightened opinion be built up which will render social reform (*e.g.*, abolition of infant marriage, of polygamy, of enforced celibacy of widows, etc.) possible, that the Bombay Government have been neglecting English education, in evidence of which he quotes their lower fee rates which compare very unfavourably with those of Bengal. (The position is now-a-days strangely reversed.)¹

The controversy is brought to a close by the Despatch from the Court of Directors in 1854.² Its substance as regards the Language Problem is as follows:—

Section 7.—Education in India must have for its object the diffusion of European knowledge.

Section 8.—There is much value in Oriental Studies.

¹ Richey, J. A., *Progress of Education in India, 1917—1922*, date 1924, II, page 111:—Bombay, Rs. 29-8; Bengal, Rs. 19-2; annually per boy.

² Selections from Educational Records, II, page 364.

Section 9.—But they cannot form the foundation of any general scheme of education.

Section 10.—High attainments in English Literature and European Science are at present confined to a few. European knowledge of a lower, yet useful order, must be extended more widely.

Section 11.—Owing to lack of translations it has hitherto been necessary for all those who desired a liberal education first to master the English language—A knowledge of English will always be essential to those natives of India who aspire to a high order of education.

Section 12.—Owing to the commercial value (especially in the neighbourhood of big towns) of a smattering of English, the English language has come to be looked on as an end rather than a means, and the vernacular has been neglected.

Section 13.—“It is neither our aim nor desire to substitute English for the vernaculars.” The vernacular is the official language of Government and of Justice. The study of the vernacular must therefore be a part of any general system of education, and the vernacular must be the medium of mass education.

Section 14.—English should be taught where there is a demand, but must be combined with study of the vernacular. English is the “most perfect” medium of instruction for those who have a sufficient knowledge of it; for the other larger class the vernacular must be used. Masters having a good knowledge of English, and thereby access to European thought, may impart their knowledge through the vernacular to others. In this way the vernacular will be enriched.

THE THEORY OF FILTRATION AND THE CAUSES OF ITS FAILURE.

Thus the central idea of the 1854 Despatch is a bilingual education for the upper classes and a popular system of education in the vernacular for the rest: the bilingual upper classes are to act as a “filter” of European culture, and are to transmit it to the vernacular system in the form of teaching and of translations.

Such was the theory. That it has not been successful as a policy is a matter of common knowledge; and the causes of its failure are not far to seek. The idea of the Directors was, no doubt that a relatively small "upper class" educational system should be provided, charging high fees, and catering only for the brighter boys; but there is in Bengal a large and ill-defined middle class consisting of persons who can claim that they are destined by caste for clerical and professional work. In the early days English education led straight to that supreme prize, a Government post. Hence all rushed into the lottery, and the English school system became large out of all proportion to the vernacular system. Education does not filter downwards; it produces a crowding upwards. There were no prizes in the vernacular system: it was mere "education for education's sake," a thing much spoken of by politicians and professors of education and other idealists, but much less familiar to the average parent who wants to "get his children settled." The consequence was that, in spite of all the efforts of the Government, the vernacular system refused to develop, while the English system grew apace, and drew to itself a large number of boys of by no means the intellectual calibre to profit by or even cope with bilingual instruction.¹

The Resolution (October, 1844) of Lord Hardinge, Governor-General², regarding preference to educated men in admission to Government service was re-emphasised by the Despatch of 1854³ (the same year in which selection by examination for public services in England was instituted).⁴ This Resolution and Despatch accentuated the popularity of the Anglo-vernacular schools in Bengal. In former days appointments to Government service in India, as in England also, had been on recommendation. It was now stated by the Resolution and re-emphasised by the Despatch that edu-

¹ The detailed history is presented in Stark, H. A., *Vernacular Education in Bengal*, 1916. For a good description of the actual conditions in the schools—Bengal District Administration Report, 1913-4, Chapter VIII; for unemployment of the middle classes, *ibid*, Chapter IX, and Report of the Government of Bengal Unemployment Committee, Calcutta Gazette, December 25, 1924, page 1679; for data regarding the Vernacular system, West, M., *Survey of Primary Education*, 1918, 1919.

² Stark, H., *Vernacular Education in Bengal*, 1916, page 63.
³ Calcutta University Commission Report, II, page 234. Selections from Educational Records, II, page 385.

⁴ Articles on "Examination" and "Civil Service," *Encyclopædia Britannica*, 11th Edition. For the views of Macaulay on the subject, "The Times," June 25, 1853.

cation was to be the main qualification. Thus the competition for a Government post was no longer confined to those who had influence, who were of better family, or better caste, or who had a friend at court, but was open to all. Even in these later days, when the supply of graduates far exceeds the demand, the ultimate hope of the Bengali boy who is at all promising is for a Government post. In 1854 the demand of Government for officers far exceeded the supply.¹ Government was a rapidly developing organisation, and for some years its growth more than kept pace with the development of the educational system; there were few blanks in the lottery. It is difficult to realise or to illustrate by any sufficient parallel the tremendous inducement which was held out to the parents of youth in Bengal to develop this system of English education. The growth and popularity of the Civil Service Clerkship examinations in England, the pre-war Indian Civil Service examination and its effect on the Public Schools and the older Universities, give some impression of it; but in both these cases the prizes were relatively small, relatively few, the competition severe, and the capital cost infinitely greater.

This new system of appointment in India was accompanied by a sense of the need for giving an equal chance to all, and of representing all classes in the administration of the country. There were scholarships and "free places" for students who came from backward communities, and some special consideration was given to such persons in making appointments. Thus all were encouraged to come in, even those who in former days had not dreamed of hoping.

Nor must it be forgotten that the middle of the nineteenth century was a period of active commercial and industrial development, the period of the introduction of railways, of the foundation of the great European business houses, and the rise of modern Calcutta. The educational qualification was to business employers a guarantee of intelligence and of knowledge of the English language. The prizes which the business employers could offer are also to be added in estimating the educational inducement.

¹ "It is often not so much the want of Government employment as the want of properly qualified persons to be employed by Government which is felt at the present time in many parts of India." Section 73 of the Despatch of 1854, Selections from Educational Records, II, page 837.

Lastly, education carries with it a certain social status, and determines in Bengal the quality and dowry of the wife.¹

No one of these prizes could be offered by the "popular" vernacular education. There was only one popular form of education—namely English education; it grew and became the only form of education. What was intended to be the "fountain-head" became the whole river.

THE CALCUTTA UNIVERSITY AND THE POSITION OF THE VERNACULAR.

By Act II of 1857² the Calcutta University was established. Even before this event there was a marked tendency in the

¹ The present day Dowry values of educational qualifications are relatively much lower than they were in the past, but the rates are still high enough to be an inducement. They are roughly as follows in typical cases. Column 1 shows the Cash Payment made by the bride's parents to the bridegroom or to his parents; Column 2 shows the cost of Ornaments and Trousseau presented to the bride by her parents. In addition to these two charges the bride's parents would be required to expend an amount equal to about 25 per cent. of the total of the two payments on ceremony and entertainment. The table below is based on a number of independent opinions; the agreement of the various opinions was very close.

BRIDEGROOM'S QUALIFICATION		M.A.		B.A.		INTER-MEDIATE.		MATRICULATE.	
STATUS AND CASTE OF FAMILY.	CIRCUMSTANCES	1	2	1	2	1	2	1	2
		(Cash)	(Trousseau)	(Cash)	(Trousseau)	(Cash)	(Trousseau)	(Cash)	(Trousseau)
		Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Good	Average	5,000	3,000	3,000	2,000	1,000—500 & cost of education	1,000	300—200 & cost of education	500 or less
Medium	Good	2,000	1,000	1,000	500		500		
Medium	Poor	2,000	1,000	1,200	700	300 & cost of education	500	200 & cost of education	500 or less
Lower	Good	1,000	500	1,000	500				
Lower	Average	NH	500	NH	300	NH	200	NH	200

TABLE 1.—The Dowry value of Educational Qualifications in Bengal.

(Read.—An M.A. of good caste and average circumstances or of medium caste and good circumstances may expect a dowry of from Rs. 5,000, to 2,000 cash, and from 3,000 to 1,000 trousseau.)

But B. C. Pal, speech in the Legislative Assembly, 1924, puts the price of a graduate at Rs. 5,000. X. Y. Z. in the Statesman, March 18, 1924, puts it at Rs. 8,400—9,000, but this was a special case. For a criticism, see the Drama "Bibaho Bibhrat," Amritalal Basu, Collected Works, 1916, page 87.

² Selections from Educational Records, II, page 408.

Anglo-vernacular schools towards neglect of the vernacular aspect of the system. The foundation of the University set at the head of the educational system a number of teaching institutions unilingual in English as to classes, texts and examinations; and the Entrance examination of the University served as the End examination of the schools. It was but natural that the University should be more concerned with the selection of candidates possessing sufficient English for the graduate courses than of candidates with sufficient vernacular for the Filtration Policy. In the earliest stages the University actually endeavoured to comply with Government policy. The authorities allowed examination answers in Geography, History and Mathematics to be written in any living language, their idea being explicitly the encouragement of a system of schools in which English would be taught as a language only.¹ But in 1861 the regulation was changed, and all answers were required to be answered in English.

In 1864 the vernacular as a subject was removed from the First Arts and B. A. Examinations: in 1870 it was restored in the First Arts. In 1906, as a result of the recommendations of the Education Commission of 1902, the vernacular was made compulsory in the Matriculation, and permission was granted to answer the paper on History in the vernacular or in English.

The Commission of 1902 and the Government of India Resolution, 1904, protested against the excessive use of the English medium and neglect of the vernacular. The Conference on English and Vernacular teaching in Secondary Schools (Simla, 1917) in general considered that the present situation was unsatisfactory, but they reached no definite conclusions.²

Thus the Vernacular was consistently neglected; and even the option of using it in examinations was not taken advantage of even when allowed. For twelve years the option was offered of answering the Matriculation History paper in the vernacular, but only one-tenth of the students took advantage of it. Sir Ashutosh Mookerjee,³ the late Vice-Chancellor, suggested

¹ Calcutta University Commission Report, II, page 234.

² It is interesting to observe that in the above history the influence of the Government has been continuously Pro-vernacular, while the public has been continuously Pro-English. Compare Loram, C. T., Education of the South African Native, 1917, page 227, for a similar phenomenon in Africa.

³ Minutes of the Senate of the Calcutta University, June 17, 1922.

that this might be due to the lack of vernacular "cribs," but such articles of commerce would certainly have been produced in response to a demand. The true reason is more probably that English is felt to be the all-important subject, that the examination is a diploma in English, that a candidate fears he might displease the examiner by writing in the vernacular.

This was the position when the Calcutta University Commission came to Bengal in 1917, and conducted the most far-reaching examination yet made of the educational system of the province and of its problems. Their report advocates more attention to the rational teaching of the vernacular, reduction in the use of the English medium up to the Matriculation stage, its retention above that stage, improvement in the teaching of English, and more attention to practical knowledge of that language.

In general they state that "Our general aim is to make the educated classes of Bengal bilingual."

RECENT EVENTS.

In 1920-21 the Non-co-operation party made an attack on the Secondary School system of the Province, assailing it as denationalising in tendency and productive of a useless literary training which failed to provide the boy with a livelihood. The attack coincided with a period of general financial stringency and of retrenchment in provincial expenditure, both causes operating to produce Middle Class unemployment.

On May 7th, 1921 a Conference of Headmasters was held by the Calcutta University in order to discuss various reforms in the Matriculation examination, and as an outcome of the conference a Draft of new Regulations for the Matriculation was laid before the Senate on June 17th, 1922. This Draft proposed to increase the importance attached to the Vernacular in the examination, and in Item 7 laid down that "Instruction and examination in all subjects in High Schools shall be conducted in the Vernacular. Provided that the Syndicate may in special cases make exceptions to this rule or postpone its operation for a prescribed time."

An interesting debate took place on the amendment that "may" be substituted for "shall": the amendment was lost.

The approval of Government was required to bring these Regulations into force, but the decision of Government was delayed by the attempt to create a Board of Secondary and

Intermediate Education. Owing to the delay in the creation of the Board, Government eventually, in August 1924, replied to the University adopting the attitude that the move was in the right direction, but that it was not practicable to make any hard and fast rule regarding the medium of instruction in view of the variety of languages involved, especially since the Province of Assam, with its acute linguistic problems, is concerned. Some preliminary experiment in this matter would at least be desirable. As regards the medium of examination, the recommendation of the University Commission should be adhered to, *viz.*, the option should be given of answering in English or in the Vernacular in all subjects except English and Mathematics.

A Committee has since been formed to draft a set of Regulations on this basis.

CHAPTER 3.

Bilingualism and National Culture.

NATIONALITY AS AN OBSTACLE TO LINGUISTIC ASSIMILATION.

Nationality is the fundamental obstacle to the linguistic assimilation of mankind: on all other grounds the case for the elimination of minor languages is unanswerable. It would obviously be advantageous to Bengal if it could become English speaking, or could adopt any one of the major languages of the world. The country would be placed in immediate touch with the main stream of progress: it would be initiated into the "Great Society" of mankind. The advantages of contact with Western civilisation are fully appreciated; yet there is a fear that the gain may be out-balanced by a far greater loss.

In the period 1860-1880 there was in Bengal a great wave of imitation of all things European, and an enthusiastic adoption of the English language: This movement has been succeeded by a tendency in the opposite direction,¹ a revival of national feeling and a distrust of Western influence, which perhaps culminated about 1910 and may be now very gradually adjusting itself to a working compromise. The revival is motived by a Fear:—

"The motive force behind this swing of the pendulum," says Lord Ronaldshay, "is sufficiently plain. It is fear—a fear lest below the triumphant assertiveness of Western civilisation all that is essentially and distinctively Indian is doomed to perish and utterly to disappear. With the object lesson of young Bengal in the 19th century before one, this fear is at least intelligible. Nothing strikes one so much at the present as the extreme sensitiveness of Indians in their relations with Europeans. It is precisely what one would expect in the case

¹ Sen. D. C., *History of Bengali Language and Literature*, 1911, Chapter VII: Dutt, Michael Madhusudan, "Ekeilki bole Sobhyota": Singh. Jatindramohan, "Dhrubotara": Tagore, Dr. Rabindranath, "Gora." Compare Loram, C. T., *Education of the South African Native*, 1917, page 229.

of a people afflicted, whether consciously or not, by a fear of this kind which I have described."¹

The modern Bengali is trying to find a way in which to reconcile the preservation of his own individuality and nationality with the learning of English and the development of modern civilisation and culture.²

We propose to enquire why the learning of a foreign language should be considered a menace to the development of nationality. What is the nature of this factor of Nationality, and what is its connexion with the problem of Bilingualism?

THE MEANING OF "NATIONALITY."

"Race represents what a man is; all these other details (namely Nationality, Family, Caste, Religion) represent what a man does."³

Nationality is "etymologically an ethnical but more accurately a cultural concept."⁴ It is based on a "consciousness of kind"⁵ which may be illusory but is not less effective for that; it has relation to a definite home country.⁶ It may be promoted by political unity and individuality, by a differentiating force such as the Reformation, by a threat of danger such as the Spanish Armada, by a victory as in the case of the Franco-Prussian War, by a revolution as with France. Ramsay Muir⁷ mentions seven conditions which are conducive to national consciousness—a defined geographical area, unity of race, unity of language, unity of religion, common subjection during a long stretch of time to a formal and systematic government, community of economic interest, possession of a common tradition. Each of these may help to produce national feeling, but to each one also exceptions can be quoted.

Nationality in its modern form, as an enthusiasm permeating the masses, is a comparatively recent phenomenon. Rose⁸ traces its beginnings from the Spanish Rising of 1808 and

¹ Ronaldshay, Earl of, *Journal of the Royal Society of Arts*, LXXI, 3665, page 223. See also "India at the Cross Roads" (by the same author) *Times Ed. Supp.* 461, Feb. 6, 1921, page 63. This matter has subsequently been embodied in a book entitled "The Heart of Aryavarta," 1925: see Chapters I to III and V, VI.

² Bevan, E., *Indian Nationalism*, an Independent estimate, 1913, page 135. gives an interesting picture of the clash of modern industrial civilisation and Indian life.

³ Ripley, W. L., *Races of Europe*, 1899, page 32.

⁴ Beer, G. L., *The English-speaking peoples*, 1917, page 43.

⁵ Giddings, F. H., *Principles of Sociology*, 1893, page 17.

⁶ Herbert, S., *Nationality and its problems*, 1920, page 29.

⁷ Muir, Ramsay, *Nationalism and Internationalism*, 1919, Chapter I.

⁸ Rose, J. H., *Nationality in Modern History*, 1916, page 53.

from the Italian War of Liberation of 1859. This modern phenomenon of Nationalism is more than an idea; it is "a union of hearts, a spiritual conception."¹ McDougall objects to Ramsay Muir's unpsychological terminology in calling Nationality a "Belief;" Nationality is not a Belief, but rather a Sentiment;² yet more than that, for there must exist such mental organisation as will render the group capable of effective group life, of collective deliberation and collective volition.³

Nationality, then is a comparatively recent phenomenon of a purely psychic nature; it may be produced by various conditions; its essentials are a sentiment and a power of collective thought and action.

LANGUAGE IN REFERENCE TO NATIONALITY.

Community of language is possibly not a necessity of national life.⁴ There are instances, of course, where there is community of language without common nationality (*e.g.*, the German-speaking Poles, and the black and white population of America): but it is difficult to discover an instance of true nationality in which there is no community of language. The case of the Jews is commonly quoted. There are certainly many factors in this case which would tend ordinarily to produce nationality—a strong common tradition welded by a period of subjection, a common literature, community of blood, and a physical difference. Yet it is extremely doubtful whether the modern Jews can be considered to be a nation, or whether they even consider themselves as such.

The three essentials of national feeling are Difference. Community of purpose and the Sentiment. The importance of language in the promotion of national life is due to its action in the service of these three essentials. Language differentiates; it intensifies and preserves national sentiment by acting as the medium for the expression and record of the ideas of national life, of national history, literature and tradition.

LANGUAGE IN REFERENCE TO COMMUNITY OF NATIONAL PURPOSE.

In addition to mere sense of Difference there must also exist "such mental organisation as will render possible collective deliberation and volition." "Democracy"—and

¹ Rose, *op. cit.*, page 153.

² See Glossary.

³ McDougall, W., *The Group Mind*, 1922, pages 99—100.

⁴ Loram, C. T., *Education of the South African Native*, 1917, pages 229-230.

the word is here used almost as a synonym of nationality,—“depends upon social solidarity; it depends upon a certain community of ideas, standards, ideals and aspirations amongst all the members of the democratic society.”¹ It “involves unification whereby members of the democracy may obtain those common ideas and common modes of thought, feeling and action that make for co-operation, social cohesion and social solidarity.”² India is capable of collective deliberation in virtue of its English-speaking upper classes (whose representatives meet at Simla and Delhi), but beyond this it does not possess the power of “collective deliberation and volition,” nor a “community of ideas, standards and ideals,” “social cohesion and social solidarity.” These things exist in a measure in the individual province and language units, but they are unable to cross the language frontiers. There is such cohesion in America, and McDougall attributes it largely to the ease of communication and to the newspaper system: he contrasts the lack of cohesion of Russia which is due partly, in his opinion, to the lack of such a newspaper system and to difficulty of communications.³

LANGUAGE IN REFERENCE TO NATIONAL SENTIMENT.

Ramsay Muir considers “the possession of a common tradition” to be “the most potent of all nation-moulding factors.”⁴ “A common language”, he writes, “means a common literature, a common inspiration of great ideas, a common heritage of songs and folk-tales embodying and impressing upon each successive generation the national point of view.”⁵ Ripley⁶ considers a common fund of literary and historic tradition to be one of the two essentials of political unity. This common fund of tradition is carried ordinarily in the national language. hence in the case of a non-European people the “adoption of a European language as the language of instruction would imply an utter severance of the intellectual and moral development of the natives from their past history,”⁷ and would so produce an early breakdown of national feeling and self-respect.

¹ Bagley, W. C., *School and Home Education*, Dec. 1914.

² Commission on the Re-organisation of Secondary Education U. S. Bureau of Education Bulletin, 1913.

³ McDougall, W., *The Group Mind*, 1920, page 131. Also see Appendix to this chapter, “Newspaper-reading in Bengal.”

⁴ Muir, Ramsay, *Nationalism and Internationalism*, 1919, page 42.

⁵ Muir, Ramsay, *Nationalism and Internationalism*, page 37.

⁶ Ripley, W. L., *Races of Man*, 1899, page 17.

⁷ Reinsch, P., *Colonial Government*, 1905, page 43.

A certain confusion of thought is apt to arise on this point. The necessity of a common stock of national tradition, of social ideas and of legend is undeniable, but we may enquire why it should be necessary for these to be expressed in one language rather than another. Where a definite change of national language takes place (as in the case of the Ahoms) need there necessarily be a severance from all national tradition? If so, the national language must have some special property in the preservation of national feeling other than the mere embodiment of national legend; for otherwise, so far as this one requirement is concerned, we might imagine a unilingual world still divided into nations each with its body of national tradition still intact.

The special value of the national language in the preservation of the sentiment of nationality consists rather in what the language is, than in what it contains; for there is group feeling in tribes whose language contains little or no literature. National language is peculiarly an expression of the colour of national thought, and its words possess an emotional connotation acquired by the individual citizens in infancy. Such connotations cannot be possessed by the words of any other language. The words of another language may mean the same, but they cannot *feel* the same.

There are here two points that are fundamental:—

- (1) The special adaptation of a language to the nature of a people's thought; and
- (2) the special emotional value of a first language.

NATIONAL LANGUAGE AS THE EMBODIMENT OF A NATIONAL TYPE OF THOUGHT.

The differences of languages are due to—

- (1) Different forms of expression.
- (2) Different analysis of experience.
- (3) Actual differences of experience.
- (4) The emotional value of words.

(1) *Different forms of expression.*

We are not here concerned with difference of meaning, but with the fact that a perfectly simple idea is expressed by two languages in totally different forms, *e.g.*, The girl is

running down stairs: *La jeune fille descend l'escalier en courant*.¹ Speech is not a building up of a thought by putting together words, like type-setting; the idea appears as a whole and in speaking we analyse it and express the analysis.² The concept is the same in the two instances above, but the analysis differs. The difference of national thought is revealed, where the ideas remain the same, in the greater or less exactness of analysis and greater or less economy of words. Different languages emphasise accuracy in different respects; Bengali is very exact in the time values of its tenses: Hindustani attaches great importance to gender.³

(2) *Different analyses of experience.*

"Languages notoriously differ from one another in the selection of 'objects' or 'lumps of experience' to which they assign the honour of separate words. Each language possesses certain words which have no exact equivalent in other languages."⁴ The examples given are *ἄβρις, σωφροσύνη ratio*:—we might add the Hindustani *Zid*, the Bengali *Doladoli*⁵ . . . "But, far more important, names denoting identical objects and quite common objects differ greatly in their connotation in different languages." . . . *Example*.—*Pater* is not identical with 'father,' nor is *ὄλη* identical with 'wood' . . . "Even where a word is definitely borrowed it proceeds to change its meaning by acquiring secondary associate-meanings from its new neighbourhood and losing some of those of its first origin." For

¹ Kittson, E. C., *Theory and Practice of Language Teaching*, 1918, page 161.

² "Psychologically considered the sentence is . . . at the same time a simultaneous and successive whole—simultaneous since in every moment of its formation it is in consciousness in its entire extent . . . successive since the whole changes from moment to moment in its consciousness content, while definite ideas one after another appear in the focus and others grow darker." Wundt, W., *Volker Psychologie*, page 236. Huey, E., *Psychology of Reading*, 1910, page 128.

³ Compare Darmesteter, A., *The Life of Words*, 1896, page 14. Such differences are not, of course, the result of differences of national mentality:—"It is just as arbitrary to make language the outcome of mentality as mentality the outcome of language. Both result from circumstance and are the product of culture." Vendryes, J., *Language*, 1925, page 236.

⁴ *The Classics in Education*, H. M. Report, 1923, page 13; also Boas, F., *The Mind of Primitive Man*, 1913, Chapter V.

⁵ *Zid*, A vindictive prejudice against a person and an attempt to make life thoroughly unpleasant for him. *Doladoli*, Party-faction and quarrelling of a degree, duration and persistence perhaps peculiar to the *mulassal* of Bengal (or perhaps not).

example the Bengali-English "Family member" has a special reference to the Joint Family System and means much more than "member of the family" in normal English. Each word and each phrase "embodies its own peculiar society of meanings, some dominant and some subconscious, some of them conceptual ideas, some images, and some emotions. The whole society signified by a word-symbol invests the meaning of that symbol with a certain quality."¹

(3) *Actual differences of Experience.*

Actual difference of idea and of social systems between England and Bengal make it impossible to translate Jane Austen into Bengali. For example the opening paragraphs of "*Pride and Prejudice*" may be taken:

Pride and Prejudice. Chapter I.—"It is a truth universally acknowledged that a single man in possession of a good fortune must be in want of a wife. However little known the feelings or views of such a man may be on his first entering a neighbourhood, this truth is so well fixed in the minds of the surrounding families, that he is considered the rightful property of some or other of their daughters.

"My dear Mr. Bennet," said his lady to him one day, "have you heard that Netherfield Park is let at last?"

Mr. Bennet replied that he had not

"Why, my dear, you must know.....that Netherfield is taken by a young man of large fortune from the North of England....."

"What is his name?"

"Bingley."

"Is he married or single?"

"Oh single, my dear, to be sure. A single man of large fortune, four or five thousand a year. What a fine thing for our girls!"

"How so? How can it affect them?"

"My dear Mr. Bennet," replied his wife, "how can you be so tiresome? You must know that I am thinking of his marrying one of them."

"Is that his design in settling here?"

"Design? Nonsense, how can you talk so! But it is very likely that he may fall in love with one of them, and therefore you must visit him as soon as he comes."

"I see no occasion for that. You and the girls may go, or you may send them by themselves which, perhaps, will be still better; for as you are as handsome as any of them, Mr. Bingley might like you the best of the party."

It is not merely that the connotations of words are inadequate or wrong, but there are what Lawrie calls "unexpressed associations,"² and more than this, unexpressed

¹ The Classics in Education. H. M. Report, 1923, pages 13, 14. Compare Jespersen, O., How to teach a foreign language, 1917, page 55 on the "Undertones" of words. Ramsay Muir, Nationalism and Internationalism, page 35. Also Darmesteter, A., The Life of Words, 1888, Chapters II and III.

² Quoted by Smith, F., British Journal of Psychology, xiii/3 Jan., 1923.

postulates whose absence from the mind of the foreign reader may make the whole passage incongruous or meaningless; whereas the simultaneous presence of wrong postulates and associations tends to distort the meaning in an alien direction. The passage quoted above is difficult to translate into Bengali because of the difference between the English and Bengali marriage systems. The English system is not present in our consciousness in reading the passage, yet, were the idea non-existent, the passage would be meaningless; and were an alien idea present, such as that of the Bengali marriage system, the passage would be actively discordant.

An experiment¹ was made to illustrate this point. The passage quoted above from Jane Austen was translated into Bengali by one person, then from the Bengali version into English by another, from this English version back into Bengali by another, and so on until there were seven Bengali and seven English versions. The translators used in the first stage of the experiment were the very best available members of the University staff and men of distinguished scholarship in various parts of Bengal. For the later versions less qualified persons, *e.g.*, school teachers, were selected in order to observe the effect on the translation of minds less in contact with European ideas.

The more interesting changes in the passage from *Pride and Prejudice* are shown below:—

Original	. . .	"It is a truth universally acknowledged that a single man in possession of a good fortune must be in want of a wife."
1st English version	.	"To an unmarried man who happens to be rich a wife is an absolute necessity."
2nd (and subsequent)	.	"Cannot avoid having a wife."

¹ With Manmatha Nath Chakraverty . . . In order to prevent merely verbal transposition from one language into the other it was necessary to eliminate words which definitely "anchor" the passage. For this reason proper names were indicated by initials. The experiment above does not imply that no Bengali can understand the selected passage. The purpose of the experiment was to discover by repeated filtrations through the Bengali mind what would be the misunderstandings which would arise in the minds of those who do not possess the necessary insight.

From "must be in want of a wife" to "cannot avoid having a wife" is indeed a translation, and represents an essential difference between the two social systems.

Original	. . .	" <i>However little known the feelings or views of such a man may be.</i> "
1st English version	. . .	"Whether his attainments are at all known or not."
2nd (and subsequent)	. . .	"Whatever be his attainments intellectual or otherwise."

Jane Austen's jest at the failure to consult the gentleman is missed, and the passage becomes a reference to the fact that, under the Hindu system of Dowries, financial considerations often predominate in the selection of the daughter's husband rather than considerations of character and intelligence which are likely to conduce to the girl's happiness.

Original	. . .	" <i>That he is considered the rightful property of one or other of the daughters.</i> "
1st English version	. . .	"That every one in the locality will take him for the future husband of his daughter."
2nd	. . . .	"Prospective husband of his daughter."
3rd	. . . .	"Would-be son-in-law."

In Bengal the parents arrange the match: the daughter's wishes count for very little; hence the Bengali translation converts the daughter's proprietary suitor into the parent's proprietary son-in-law.

Original	. . .	" <i>Have you heard that Netherfield Park is let at last?</i> "
1st English version	. . .	"That Netherfield Park has a tenant."
2nd English version	. . .	"The Netherfield Park has at last got a tenant."
3rd	. . . .	"That after such a long time a man has hired N.'s garden house."
5th	. . . .	"That C.'s pleasure house has been let to some one."
7th	. . . .	"That the pleasure garden of Mr. C. has been let."

The letting of a Bengali's ancestral home is inconceivable.¹ "Garden House" and "Pleasure House" are Bengali-English for the small residences which wealthy Bengalis maintain a few miles out of the town for occupation during week-ends and holidays: these might be rented out. The transition to "Pleasure Garden" is curious, but the phrase seems to be used with the same connotation.

Original "You must know that I am thinking of his marrying one of them."

1st English version (and subsequent versions). "I am thinking of marrying one of my girls to him."

This is again the essential difference between Bengali and English marriage customs.

Original ("And therefore you must visit him as soon as he comes"). "I see no occasion for that."

1st English version . "It is not necessary."

4th "It is no business of mine to do so."

5th "It is not for me to do that."

Bengali customs in the matter of visiting are different from those of England.

A similar experiment was made with the first stanza of Shelley's *Ode to the West Wind*. The sixth and seventh English versions are addressed to the North-West Wind. The North-West wind in Bengal brings sudden and violent thunder-storms at Easter time, which are a grateful but temporary relief from the hot weather.

(4) *The Emotional Values of words.*

"All words are spiritual" says Walt Whitman; every word is in a sense a quotation; it has reference to past contexts. Christian names accumulate an emotional connotation which differs from one individual to another because of the different past histories of the individuals. So also the

¹ It is inconceivable for the very good reason that, under the Joint Family System, the ancestral home is the permanent abode of a very large number (amounting in some cases to several hundreds) of relatives extending over three or four generations.

common words of a language acquire an emotional significance which is not in the dictionary, which vanishes as a volatile essence in translation, which goes unperceived by the foreign scholar like a secret symbol of free-masonry observable only by the true national initiate. "An Englishman, a Frenchman and a German cannot by any means bring themselves to think quite alike, at least on subjects that involve any depth of sentiment: they have not the verbal means."¹

The period of supreme importance in the development of the emotional life of the child is infancy; and this also is the period in which the mother-tongue is acquired. We should expect therefore that the words of the mother-tongue will have a peculiar potency, a peculiar closeness of bond with the life of emotion and feeling unattainable by the words of any speech subsequently learned.²

It is for this reason that "no noble work of imagination"—we might rather say of emotion, or of artistic fervour,—"was ever composed by any man except in a dialect which he had learned without remembering how, and which he had spoken with perfect ease before he had ever analysed its structure."³

The cause of this phenomenon does not lie in the absence of analysis nor in the absence of conscious learning, for we may "pick up" a foreign language unconsciously and without analysis; it is rather a matter of date: the words of childhood have a fragrance of their own.

THE "EVOCATIVE" FUNCTION OF WORDS.

The function of words in reproducing their associated emotional atmosphere has been named by Ogden and Richards⁴

¹ Mackenzie, J. S., quoted in Ogden, C. and Richards, I., "The Meaning of Meaning," 1923, page 375. See also Sapir, E., *Language*, page 237.

² Note the emotional insensibility of the congenitally deaf. Watts, F., *Abnormal Psychology*, 1921, page 178.

³ Macaulay, Frederick the Great. Beckford's *Vathek* is an exception:—It is a "work of imagination" but not one of emotion nor of artistic fervour, nor is it a very "noble" work. Joseph Conrad is a more definite case,—but he himself bears witness to the main argument above. He used to "denounce the English tongue in violent terms": "Conrad's indictment of the English language was this, that no English word is a word: that all English words are instruments for exciting blurred emotions." Hueffer, F. M., Joseph Conrad, *A Personal Remembrance*, 1925, pages 104 and 212. There is also Dr. Rabindranath Tagore.

⁴ Ogden, C. and Richards, I., *The Meaning of Meaning*, 1923, page 373.

their "Evocative" function, as distinguished from the "Symbolic" function, where the word stands as an exact sign for a particular idea. In the Symbolic use the essential is correctness of idea; the word must refer to one idea, to one idea only, and the hearer must receive the same idea as that of the speaker. In the Evocative use of words the essential is correctness of the attitude aroused. The word —

"Hail to thee, blithe spirit,—

Bird thou never wert,"

in their Symbolic use mean that the hawk is not one of the *genus* Aves. The phrase "Square Root" has no Evocative function; it means just that and no more. The phrase 'Yours affectionately' in its Symbolic use would to a foreigner convey the idea of love; in its Evocative use it may mean merely that brand of sedately distant affection reserved for certain of our relatives. The business man's 'Yours truly' may be on a similar footing.

This dual usage of words is one of the greatest hindrances to the expression of scientific or philosophic truths for which the purely Symbolic function is required; and perhaps for this reason we prefer in such cases, as also in the expression of matters of physiological or anatomical description, to use the Latin forms instead of those of old English origin, because the foreign derivatives are ordinarily learned later and have not therefore the emotional and personal tinge of those of the mother-tongue. The use of a foreign tongue may be thus an actual advantage in the expression of correct and scientific thought.

THE FEAR OF LOSS OF NATIONALITY.

Returning now to the previous argument, we find that Group life and National life are a matter of 'continent,' rather than of reason. The special function of the first language, the mother-tongue, in reference to the preservation of national life is its Evocative function; it is the form of expression which is, for its own people, most intimately bound up with the emotional life. This function cannot be performed by any Second Language: no second language possesses the Evocative values of a mother-tongue. Hence the culture of no second language has power to displace the culture of the mother-tongue.

The fear of loss of nationality by acquisition of the English language and of Western culture is ultimately to be derived from the theory of Renationalization. The theory is expressed in reference to the immigrant into America in the form of Americanization,¹ where, for the social and political well-being of the country, it is necessary that the alien should be incorporated into the state. A similar theory of Renationalization is expressed in reference to missionary and educational proselytism.

There is an essential difference between this missionary project and the problem of embodying an individual alien into the English-speaking society of America where he is surrounded by the culture which he is to acquire, with the words of the language ever in his ears, and their *referents*² as his actual environment. Yet even in this case the difficulty or even impossibility of assimilation is best recognised by those who are most intimate with the attempt. Either nothing is achieved, and after even fifty years and even in the second or third generation³ the alien remains an alien, alien speaking, in an alien quarter, dreaming of and owing patriotism to a home which he has never seen but whose thoughts and feelings are embodied in the language of his mother:—or else, if the attempt is more successful, all that is achieved is a deprivation. "You cannot" writes Professor Zimmern, "make a Jew or an Italian or a Pole into an inheritor of Puritan or Virginian culture by waving a flag before his eyes. But what you can do is to kill in him what was the best thing he brought across the Atlantic, far more precious than the bundle he guarded so carefully in the steerage,—his own little special inheritance."⁴ It dies not by murder, but of neglect.

If in these circumstances renationalization is impossible, it is far more impossible where the culture is imported into the midst of an existing civilisation and the language of the new culture is required to replace a mother-tongue current in its own natural environment. It is inconceivable that this should succeed: it is the policy of no sane educationist or missionary; it exists and has effect to-day as a Fear only, and in this capacity is one of the most perniciously retarding influences on the development of less advanced peoples.

¹ Bush, M., "The first School days of a Non-English child"; Board of Education, Massachusetts, Bulletin No. 24, "Americanization."

² The things to which the words refer: see Glossary.

³ Jordan, R. H., Retention of Foreign Language in the home, Journal of Educational Research, III/I/ Jan., 1921.

⁴ Zimmern, A., Sociological Review. July 1912.

even in its exploded state.¹ Writers on the subject comment on this vitality, but they do not go further and seek for the cause. A possible cause appears to be that particular form of argument in support of Formal Training which may for convenience be called the Selective Fallacy. The Selective Fallacy consists in the assumption that where a certain type of training together with its final examination *attracts* and *selects* a certain type of intellect, it has produced and will produce that type of intellect in all persons subjected to it.² In applying the English system of education to India it was assumed that the same education everywhere would produce the same type of educated person: it will certainly, rigidly applied, *select* the same type, but if applied to unsuitable materials its rejections will be excessive,³ and there is considerable probability that in time the type of material will re-act upon the education (that is, the schoolmaster and examiner will tend, unconsciously, to adjust the education and examination to the nature and capacity of the average pupil).

There is another contributory factor which has in the past encouraged the idea of Renationalization by Language, namely the Fallacy of Word Magic, the tendency to assume that a word has a fixed connexion with its referent and that by acquiring the word one acquires the referent.⁴ The prevalence of Word Magic in education would make the subject of a very interesting chapter: we might trace to its influence the learning by heart of the Catechism, the repetition of Collects and poetry. Its influence in the sphere of English education in India is sufficiently apparent. The English language

¹ See Collar, G., and Crook, C. "School Management and Instruction," 1905, pages 133, 194, 215; Garlick, H., "A New Manual of Method," 1907, pages 70, 88, 218; Barnett, P., "Teaching and Organisation," 1910, pages 78, 214, 334.

² "When the good thinkers studied Greek and Latin, these studies seemed to make good thinking. Now that the good thinkers study Physics and Trigonometry, these seem to make good thinkers. If the abler pupils should all study Physical Education and Dramatic Art, these subjects would seem to make good thinkers. These were indeed a large fraction of the programme of studies for the best thinkers the world has produced, the Athenian Greeks." Thorndike, E. L. "Mental Discipline in High School studies," Journal of Educational Psychology, XV/2 Feb. 1924, page 98.

³ That is it will "pluck" the normal candidate, a sure sign of either a wrong examination, or a wrong education, or both. See Calcutta University Commission Report, Vol. VI, plates following page 120, e.g., Plate 6A. The frequency curves shown in these plates are silent condemnations of the examination whose results they record (or of the education which has produced these results).

⁴ Ogden and Richards, The Meaning of Meaning, Chap. II.

is an embodiment of English culture: in order to get in touch with English culture it is necessary to learn English: hence the assumption is made that if an individual learns English he will acquire English culture; he will think in the English way and become cultured in the English way. This assumption might have some justification in case of the alien immigrant into America, for the learning of English would put him in immediate and easy touch with American civilisation. But in the case of English in the educational system of Bengal the position is wholly different. English is learned out of its context, away from English scenery, English life, English people. The words of the language can be given meaning only in terms of the apprehensions of Bengal. In this way the English language becomes adapted to express Bengali thought. The English may be indistinguishable from that of an Englishman; if however the accompanying imagery and ideas could be thrown upon a lantern screen, the difference would immediately become apparent. The words are the words of England, but the thoughts are the thoughts of Bengal.

THE THEORY OF ENGLISH TEACHING IN BENGAL.

It is precisely because the Bengali himself is impregnated with this false doctrine of "Renationalization" that he fears the contact of Western culture. If he realized the impotence of a second culture to replace that of the mother-tongue, he would be more anxious to acquire what now he covets and yet fears. But he would acquire it in a different way. He would acquire it as a definite fulfilment of a specific need, rather than, as at present, in the form of a vague and general exercise.

If English teaching were considered not as an education and a culture in itself, but as the teaching of a second language necessary and useful for certain purposes, it might be imagined that the public would enquire for what purpose the language was being taught, and whether the method of teaching subserved those purposes. For what purpose is English poetry taught in the Middle school textbooks of Bengal? For what purpose is Old English taught in some of the Indian Universities? In the teaching of French to English children typical scenes of French home life are used: white wine is on the dining table, the boys go into school two by two, the

Mayor distributes the prizes, etc.¹ Similarly in "The English Family Robinson"² the home life of an English family is described for Indian children introducing such words as "fireplace," "chocolate creams," "haystack."

What is the likelihood that an Indian boy will ever find occasion to use the words "fireplace" and "chocolate creams"? Does the Indian boy need the English language in these domestic aspects? For what does he need English?

It is difficult to determine on what principle the present school courses and textbooks are constructed. It is possible that in part they are an inheritance from the period when English teaching was first introduced, a period when the psychology of Combe was not wholly dead: certainly they show little sign of special adaptation to any specific need or purpose but resemble rather those general syllabuses which might reasonably be taught to an English boy. It is, however, doubtful whether this is wholly, or even in the main, due to any deliberate attempt to alter the cultural bases of the Bengali, or to any theory of Renationalization. It is probably due to a far more vicious generalisation, namely the Schoolmaster's Generalisation of Subjects, his subject classification of human knowledge and his refusal, like an auctioneer, to "break up his lots."

The world, or rather mankind's experience of it, is not made up of subjects;³ it is a mass, constantly rearranging its component atoms in response to momentary needs. For purposes of educational convenience we classify knowledge and skill into large bodies of topics which appear to have some logical relationship, though the atoms are at times amazingly perverse in their attempts to cross into compartments where they "do not belong." The exponents of "Correlation" and later of the "Project" Method⁴ have emphasised this fallacy on the side of its exclusions. On the side of its inclusions it has been less criticised, though it is no less vulnerable.

The fallacy is seen best in regard to adult education:—a carpenter finds difficulty in his work through his lack of

¹ Betis, V., and Swan, H., *The Facts of Life*, French Series, No. 1, 1895.

² Turnbull, E. L., *The English Family Robinson* (1923).

³ Kilpatrick, W. H., *Child Life*, No. 120—123, Dec. 1920—March 1921.

⁴ See the Bibliography of the Project Method in the Twentieth Year-book of the National Society for the Study of Education, 1921, page 91.

skill in calculation: he goes to the schoolmaster and explains his trouble. "You need" says the schoolmaster "a little course in elementary Mathematics." He classifies the need into one of his ready-made "Lots" and serves out a block of experience—which includes L. C. M., Troy weight, Discount, and a number of other items connected logically with the "Subject" but entirely unconnected with the specific need.¹

This is precisely what is done in dealing with the language problem of backward peoples. We are impressed by the insufficiency of the local culture of the people whom we are to educate, with the necessity of initiating them into a larger culture for the sake of their progress. For this purpose they need our language. Therefore let us teach them English and initiate them into English culture; and we export to them a standard course in English, starting with the Direct Method and ending in an M.A. syllabus which includes Old English and Philology.

"Oh reason not the need: our basest beggars

Are in the poorest things superfluous:"

but the educationist is compelled to "reason the need," for school life is very short, the content available for education unlimited, and the inclusion of irrelevant or unneeded matter in a syllabus is a lesson to the child in misapplication of time. Culture is a very wide term; we may mean by it the finer shades of literary and artistic feeling, or knowledge in the field of exact science, technology and fact, in short that matter which is contained in the language used in its Symbolic function.

Again language is a very wide term; probably no living man knows the whole of English. It is possible for two persons—a litterateur and a scientist—to learn a foreign language perfectly, each according to his needs, and be almost unintelligible to each other.

The dilemma of the educator of a backward people is sufficiently clear. If he retains the national language and leaves out the second language, the learners are cut off from all intellectual progress; if he retains the second language and attempts to leave out the national, their education is made barren in respect of emotion, character and culture of the "Feelings." Yet it is the common experience of practical

¹ Thorndike, E. L., *The Psychology of Arithmetic*, 1922, page 88.

educators that only the child who is rather above the average is capable of assimilating completely two languages in addition to the materials of an adequate education. But in a bilingual country the child who is barely average, even below the average, is compelled to learn a second language.

This dilemma can be avoided only by "reasoning the need," by enquiring precisely what the child requires from his second language and by finding a method whereby we may give that with the greatest economy of time and effort.

SUMMARY.

Nationality is the main obstacle to linguistic assimilation. The Bengali fears that the learning of English and the contact with Western culture obtained thereby may displace his own individual nationality and culture.

Nationality is a purely psychological phenomenon; its three essentials are Difference, Community of Purpose, and the National "Sentiment." These three purposes are intimately bound up with Language. Language emphasises national difference, promotes community of national purpose; it embodies national sentiment. The special value of language in the preservation of the sentiment of nationality depends rather on what language is, than on what it contains. The national language expresses a peculiar analysis of experience, a peculiar fund of experience, and, being the language of infancy acquired at the time of the first development of the fundamentals of emotional life, its words possess a peculiar Evocative (or emotional) value, unattainable by those of any second language.

It is obvious therefore that no second language can displace the mother-tongue, nor has any culture acquired through a second language the power to displace the native culture. Renationalisation even under the most favourable circumstances, for example the absorption of an alien into the surrounding civilisation of America, is ineffective in practice: how much more ineffective must be any attempt to import a foreign culture into the midst of a surrounding civilisation. The theory of Renationalization is based upon an obsolete system of psychology, namely the doctrine of the Faculties, a system which, applied to education, neglects the limitation of the teacher by the nature of the taught. The theory of Renationalization by language tends to postulate the fallacy of Word-magic, namely the fallacious idea that a word has a fixed connection with its referent, and that by acquiring the word one acquires the referent.

It is precisely because the Bengali himself is impregnated with the false doctrine of Renationalization that he fears the contact of Western culture. If he realised the impotence of a second culture to replace that of the mother-tongue, he would be more anxious to acquire what now he covets and yet fears—but he would acquire it in a different way, as a definite fulfilment of a specific need.

The attempt to teach English in Bengal as a vague and general "culture-subject," has resulted in a lack of analysis of the Bengali's precise need of English. The present school courses are partly an inheritance from former days, but are in the main merely instances of the Schoolmaster's Generalization of Subjects; they are merely blocks of experience, logically selected irrespective of the specific need or "Project."

The great disadvantage of a bilingual country is that the merely average boy and the boy of no special linguistic aptitude or inclination is compelled to learn a second language. It is therefore necessary to examine his essential need with the greatest exactness in order that his labour in this respect may be reduced to a minimum.

APPENDIX TO CHAPTER 3.

NEWSPAPER-READING IN BENGAL.

McDougall attributes the social cohesion in America and the lack of such cohesion in Russia in part to the newspaper systems of the respective countries.

An attempt was made to obtain figures on this point for Bengal by comparing the Census figures (1921) in regard to literacy with the circulation of journals and newspapers as stated in an official document (December 1922). The result is shown below: the calculation has been most carefully checked, and I am unable to explain the result unless it be that the statements of circulation of newspapers and journals are grossly incorrect. They certainly appear to represent rather the number printed than the number sold, and it has not been possible to allow for the export of copies out of Bengal,—which is probably considerable.

Males, age 20 and over	Copies of—	Number of persons per copy.
Literate	All journals and newspapers.	5.2
Bengali, literate	Journals and newspapers printed in Bengali.	8.6
Ditto	Newspapers only printed in Bengali.	72.6
English, literate	Journals and newspapers printed in English.	2.4
Ditto	Newspapers only printed in English.	7.4

TABLE 2.—Comparison of the Circulation of Newspapers and Journals with the number of Male Adult Literates in Bengal.

CHAPTER 4.

The Advantages and Disadvantages of Bilingualism in the Educational System of Bengal.

The Calcutta University Commission of 1917-19 sums up its recommendations on the language question in Bengal in the following words, "Our general aim is to make the educated classes of Bengal bilingual."¹ We shall examine the precise nature, the advantages and disadvantages of this aim.

The statement of policy is obviously an eminently sound one: it is a re-statement of the main policy of the Despatch of 1854, which in its general outline, and as an aim, can hardly be challenged. Nor does this aim appear on the face of it impracticable, since, as the Report has noted,² what so many other peoples have achieved, can be achieved also by the Bengali, and perhaps more readily, if his special gifts of memory and of linguistic capacity³ are admitted as facts. We cannot but feel, however, that the statement, especially if it be not read carefully with the whole of its context, may very easily give rise to misapprehension, owing to the very wideness of meaning of its terms, and their liability to popular misinterpretation.

THE MEANING OF THE TERM "BILINGUAL."

It is commonly believed that the bilingual person is able to speak either language with equal facility, just as it is commonly believed that there are gifted linguists who know three, four or five languages "just as well as their own language." This belief is perhaps even more prevalent in England than

¹ Calcutta University Commission Report, V, page 48.

² Calcutta University Commission Report, V, page 28.

³ "A people must possess high linguistic capacity to have achieved such a high level of customary skill," Calcutta University Commission Report, I, page 114. "The Bengali has a very retentive memory," Calcutta University Commission Report, I, page 106. But Sweet, H., "Practical study of Languages," 1913, page 79, considers that there is no valid reason for supposing one nation better than another at learning languages. Since no measurement of ability to learn a Foreign language has yet been devised (except Briggs, T., Prognosis Tests of Ability to learn a Foreign language, Journal of Educational Research, VI/5 Dec. 1922) nor are there any exact comparative data regarding the Bengali's memory, the above statements are merely opinions.

elsewhere because there are comparatively fewer bilingual persons in England, and because the general standard of knowledge of foreign languages is lower than elsewhere. The "gifted linguist" who speaks four or five languages just as well as his mother-tongue is called by Atkins and Hutton¹ a "mythical personage," as is also the man who "learns to speak French like a Frenchman perhaps in a year or less" in spite of the fact that "they" (the narrators of the myth) "know Frenchmen who have lived among us for twenty, thirty or forty years, and still do not speak English quite like an Englishman."

One would imagine that if any one could be found who was in this sense "bilingual" (that is, equally facile in two languages) in the world at all it would be a teacher in a bilingual country whose Government was especially anxious to obtain a supply of such bilingual teachers at any cost of trouble or expense. Experience, however, proves otherwise: "We have had"² says Dr. Parmelee, Secretary to the Department of Public Instruction, Quebec, "in the province of Quebec as good an opportunity. I think, as anybody has had, of having bilingual English teachers, and our interest in having them has been very great, and we made large sacrifices in our courses of study in our normal schools and training colleges for the purpose of having all teachers who go out reasonably qualified to teach both languages. We have not succeeded; they cannot lo it."

We might perhaps expect the people of Luxemburg, a state almost too small for individuality, hemmed in by French on one side and German on the other, to be bilingual, to be equally balanced and perfect in two languages. Balance, there is, but perfection in neither:—"A native of Luxemburg, where it is usual for children to talk both French and German, says that few Luxemburgers talk both languages perfectly. Germans often say to us 'You speak German remarkably well for a Frenchman,' and French people will say, 'They are Germans who speak our language excellently.' Nevertheless we never speak either language as fluently as the natives."³

The idea that bilingualism consists in a perfect mastery of both languages is a very natural one. A reasonable degree of fluency with a small vocabulary and a sufficient degree of

¹ Atkins, H. G. and Hutton, H. L., *Teaching of Modern Foreign languages*, 1920, page 9.

² Imperial Education Conference Report, 1911, page 252.

³ Jespersen, O., *Language*, 1922, page 148.

correctness will, in one who has not a complete mastery of the language himself, create the impression of perfect mastery.

Bilingualism which consists in perfect mastery of two languages is extremely rare, and it is improbable that such a phenomenon was intended by the Commission's Report. It can certainly hardly be hoped for save in a very exceptional case; the deficiency in his own vernacular of the highly Anglicised Bengali is probably not generally realised.

SPECIALISATION OF LANGUAGES.

Ordinarily Bilingualism means no more than the co-existence of two languages, both at a level of efficiency, both being indispensable. But the two languages are not of equal efficiency, nor do they fulfil the same function; the one may be the language of ordinary occasions and the home, while the other is subsidiary and serves certain special occasions for which the first is inadequate.

This point may be illustrated by the classical case of Louis Ronjat.¹ Perhaps Louis Ronjat was as near an approach to absolute bilingualism as there can very well be, since from his earliest infancy there was a deliberate attempt to create artificially a perfect balance between the two languages. Dr. Ronjat, the father, is French-speaking; whereas the mother is German-speaking. A rule was made that each parent should invariably address the child in his (or her) own language. The same rule was applied to all visitors, and to the servants. Some of the nurses were French-speaking, some German-speaking. The child grew up to the age of 53 months addressing his father in French, his mother in German. Both languages were spoken with equal accuracy, and to all intents and purposes served the same ends save for the difference of person.

Dr. Ronjat's valuable and detailed account of this case breaks off at the most interesting point: we want to know what happened in the end. An enquiry was addressed to Dr. Ronjat and his reply (given below)² is of great interest. The school

¹ Ronjat, *Le développement du langage observé chez un enfant bilingue*, 1913.

² Dr. Ronjat's reply (translated literally). Oct. 27, 1923, "Since the publication of my book, my son has carried on his work at a primary and secondary school in French, and hence this language is the more familiar to him as far as the technical terms of grammar, mathematics and physics are concerned.

He would, for instance, I think, find it difficult to express a geometrical theorem in German. But apart from that, his knowledge of

language of the boy was French. The sequel appears to be that Louis Ronjat uses either language with equal facility in ordinary conversation, but that in technical matters he uses French, whereas for literary self-expression he turns to German. Thus (to employ the terminology of Chapter 3 above) his Symbolic language is the language of his father, his Evocative language that of his mother,—his “mother-tongue.” This raises interesting speculations.

Thus even in this extreme case where the languages are actually equal in efficiency, they are not alternative. But generally they are neither equal nor alternative. This specialisation of the function of the two languages is recognised by the Commission.¹ We may therefore paraphrase the recommendation as a desire that “The educated classes of Bengal be provided with a supplementary language in addition to the mother-tongue for those purposes in which the mother-tongue is insufficient.”

THE MEANING OF THE TERM “EDUCATED CLASSES.”

The statement of policy of the Commission requires clarification in a further aspect, namely the words “Educated classes.” We have shown that the effect of the popularity and prospects of English education in its early days has been to check the development of a vernacular system. The vernacular system is confined to the Primary Schools, and of these it is

and taste for, the German language have been maintained generally on an equality (with French), and his German even takes a higher place from the point of view of literary composition, and especially poetic composition. He writes in German with a more original turn (of phrase) and he can write verse in German, whereas he does not feel naturally the rhythm and harmony of French verse, and does not write French verse, which is a normal phenomenon among those who have not made a special study of (French) versification which is still founded on the pronunciation of French of more than three centuries ago. In rapid conversation, sometimes, though rarely, he borrows a word or a phrase from the other language, about equally in either direction—an occurrence which is common even among bilingual adults. To sum up, the situation as a whole is normal, and what was to be expected.”

¹ “We are disposed to think that the educated classes in the various provinces of India will wish to be bilingual, to use their mother-tongue for those dear and intimate things which form part of life from infancy upwards and are the very breath and substance of poetry and of national feeling, to use English as a means of intercommunication necessary for the maintenance of the unity of India, and of touch, with other countries, for mutual exchange and stimulation of ideas in the sphere of scholarship and science, and for promotion of that interprovincial and international commerce and industry on which the economic future of India will largely depend.” Calcutta University Commission Report, V, page 27.

only the two pre-high school classes which are at all populous. Thus it is scarcely an exaggeration to say that there is no educational system in Bengal except the Anglo-Vernacular (High and Middle School) system. By the term "educated classes" is usually meant, in other countries, those classes who are somewhat above the average in culture, in social status and in length of schooling. Since there is in Bengal really only one school system, it follows that it includes all classes, all grades of intelligence, and persons greatly varying in social status.¹ The phrase "educated classes" has therefore rather less meaning in Bengal than it would ordinarily be expected to have, and actually has elsewhere.² Probably the writers of the Report contemplated the development of an effective system of compulsory primary education which would give greater reality to the distinction; such a system does not exist at present, nor are there the signs, which there were in 1918-19, of its early realization.

¹ The classification of the boys of three high schools in 1924 according to the profession or employment of their parents is shown below in order to illustrate this point. School A is in Dacca; School B is six miles from a small town; School C is in the country. The effect of the non-co-operation movement and Government Retrenchment on the educational hopes of the lower classes is shown in the fourth column which presents similar figures for School C with reference to the period prior to the appearance of these influences:—

Profession of boy's parents.	A. School (Town) 1924 % of total roll.	B. School (Village) 1924 %	C. School (Village) 1924 %	C School 1920 %
Cultivation and Land .	14.7	48.0	33.3	55.5
Clerk and Professions .	69.3	36.9	57.1	34.1
Shopkeeper. . .	14.2	10.7	3.3	2.7
Artisan . . .	0.4	4.4	6.3	7.7
No occupation . .	1.3	0	0	0

TABLE 3.—High School boys in Bengal classified according to the Profession of their parents, three schools.

² Boys in Secondary schools, England, 1921-22, were 7 per cent. of the total number of boys in Primary and Secondary schools (Report of the Board of Education, 1921-22, pages 13, 27); whereas in Bengal boys in Secondary schools were 19 per cent. of the total number of boys in Primary and Secondary schools (Progress of Education in India, 1917-22, II, page 80).

THE ADVANTAGE OF BILINGUALISM.

The Calcutta University Commission is "disposed to think that the acquirement of a second medium may materially assist the intellectual development of the pupils,"¹ and that bilingualism is not felt to be a handicap in other bilingual countries, such as,—to quote their examples—Wales, Belgium, Switzerland.

"There is a school of thought," says Dr. Viljeon, "which holds that bilingualism adds to a child's mental equipment: it sharpens his wits, develops his intelligence and gives him sympathy with another people."² So also the Education Department Toronto is quoted by Mr. C. Schmidt³ as stating that "the interest in the involved material and the necessity of paying attention more strictly to the forms of an alien language tend to fix ideas in the child's mind with a special vivacity which is absent when the ideas are communicated in the mother-tongue. These considerations make up largely for any supposed handicap." Perhaps the clearest as well as most extreme statement of the advantages of bilingualism is supplied by Mr. Owen Edwards;⁴ he is referring to English-speaking children living in a bilingual area of Wales:—"Even where the (English-speaking) child discontinues the study of Welsh before leaving school or soon afterwards, it is the experience of teachers that the learning of it has had an excellent effect not only on the development of intelligence but on the acquisition of good English. We do not regard the bilingualism of our country as a disadvantage in any way. We look upon it as an advantage. I believe that every schoolmaster in Wales who has given his mind to the subject looks upon bilingualism now as his opportunity and not as his difficulty. He sees that whatever advantage a child may have in a more expensive system of education by the learning of Latin or Greek or French or German, every elementary child in Wales can have by learning his second language, be it English or Welsh."

¹ Calcutta University Commission Report, V, page 28.

² Speech at the Imperial Education Conference, 1923. (It is not implied that these are the views of Dr. Viljeon.) The above is from a verbatim record by the author: the speech is epitomized on pages 188-189 of the Report of the Conference.

³ Unpublished thesis, University of Oxford, 1923.

⁴ Imperial Education Conference, 1911, page 236.

The advantages, then, are that Bilingualism :—

1. Adds to the child's mental equipment. (Dr. Viljeon.)
2. Sharpens his wits and develops his intelligence. (Do.)
3. Gives him understanding of and sympathy with another people. (Dr. Viljeon.)
4. Fixes ideas in his mind with a special vivacity.
(Dept. of Education. Toronto.)
5. Assists him in the acquisition of his mother-tongue.
(O. Edwards.)

And lastly :—

6. Confers the advantage commonly derived from a classical education. (O. Edwards.)

This last point is elaborated in greater detail in a recent report on "The Classics in Education,"¹ and is indeed *similar* in many respects to the five points noted above.

1. The student of the Classics acquires "a certain power of understanding and judgment in fundamentals" (page 7.)
2. He undergoes a "course of training which requires the exercise of many different powers of the mind and forms a remarkable combination of memory training, imagination, aesthetic appreciation, and scientific method" (page 7.)
3. He obtains "training in the reasoning powers" (page 8.)
4. He learns to "adapt general rules to particular cases" (page 119.)

It is perhaps regrettable that the Departmental Committee have so "trenched on the quicksands of doubtful doctrine."² For "functional psychology, affirming that the mind is developed through adjustment to given situations, knows nothing of a mental power thoroughly detachable from the place of its origin and perfectly applicable to a different set of conditions."³ It is, however, unnecessary to review the psychological argument and the experimental work on which the modern conception of the curriculum is based, in contrast with the

¹ The Classics in Education. H. M. Stationery Office, 1923.

² Wodehouse, H., criticising the report in Forum of Education, 1/2, June 1923, page 158.

³ Horne, H. H., Psychological Principles of Education, 1911, page 68.

Faculty psychology which has been replaced.¹ The case for the study of the classical as well as of the modern languages is based on the inherent value of the languages as expressions of thought, and on the literature to which they give access, rather than on any theories of mental gymnastics. Foreign languages are other analyses of experience, putting together in one word ideas which are divorced in the mother-tongue, separating ideas which in the mother-tongue are united in one term. Their literature gives another point of view of the history of mankind based on different postulates as to values, on a different "apperception mass" and coloured in their argument by a different temperament and a different attitude to life. The value of any language and of any national literature will depend on the intelligence and culture of the people who evolved that language and that literature, on the quality of their experience, on the ideals reflected in the record of that experience. These, rather than the difficulty or complexity of the language, are the true and unassailable values.

Jespersen gives as the characteristics of a primitive language just those very traits on which the Faculty psychologist based his argument for the Classics:—that the language is more inflected, more complex in grammar, more detailed and specialised in vocabulary.² If this be so, then the more primitive the language selected for study and the greater its difficulty, the greater its disciplinary value. But as regards difficulty we should distinguish that type of work which is difficult because it requires all of ourselves and more (in this sense the writing of "Hamlet" was perhaps difficult to Shakespeare), and that type of work which is difficult because we have to repress the greater part of ourselves in doing it:—"Whilst we spend some of our force in extorting work from a small part of the self, we spend more in compelling the rest of the self to do nothing."³ The first task is difficult because it is expressive,⁴ the second because it is repressive. It is necessary for a boy to learn at school to cope with this second type of difficulty; there is a great deal of "repetition work" in life, but it is done for a motive; it is part of some larger project. There is "repetition work" which is not part of a project save the mere earning of daily bread,—for example certain factory processes. That type of work as a means of livelihood does not fall to

¹ See Sleight, T., *Educational Values and Methods*, 1915, Chs. I—V.

² Jespersen, O., *Language*, 1922, page 429.

³ Wodehouse, H., *op. cit.*, page 160.

the student of foreign languages and the Classics: it is an unfortunate by-product of modern industrial conditions; there is no need to duplicate it in the school by the introduction of a subject on the mere merits of its dullness and repressiveness alone, any more than we should duplicate in the schools many other unsatisfactory aspects of modern life. All subjects will have their share of "repetition work," work whose interest is secondary only to some larger aim, so long as we keep up our standards, so long as we demand clean notebooks, correct and orderly figure work, accurate perspective in drawing, neatly fitting dovetails, brushed hair and clean finger nails, "finish" and "decency of living" generally. The boy wants to do his work and to live his life so that it expresses himself; the teacher demands something intelligible, accurate and finished. In this sense the discipline of a subject depends on the teacher, and discipline is found in all subjects, and in the whole process of living.¹

These considerations then are to be left aside as common to all subjects. We may also leave aside Mr. Owen Edwards' argument that the study of a foreign language is useful to a child in mastering his mother-tongue. We have no reason to suppose that, had the time devoted by the English-speaking boys to the study of Welsh, been devoted to additional and well-designed study of English, the improvement of English would not have been even more marked. It is possible that a foreign language may in some cases be an actual necessity for the study of the mother-tongue, for the reason that a boy is apt to take his mother-tongue for granted. It is in some ways easier for a boy to realise the meaning of correct speech in connection with some one else's language than his own. For this reason the English teacher may occasionally find a foreign language useful in the teaching of the mother-tongue: but in such cases he will introduce just so much of a foreign language as is needed for the particular purpose. His selection and treatment of material will differ very much from those of a teacher setting out to teach the foreign language for its own sake. He would certainly not select Welsh as the language for this

¹ In another sense the study of a language has "disciplinary value," namely, as an exercise in the Art (or Technique) of Language-study. From this point of view it may be said that it is advantageous to a boy to be born in a bilingual country, because he learns the Art of Language-study better. This assumes that the methods of language learning (both inside and outside the schools) in the bilingual country are better than in the unilingual:—whereas in the case of Bengal, as compared with England, they most certainly are not better (in either sphere).

purpose in the case of an English boy, nor English in the case of a Bengali. (The teacher would probably use several languages more nearly and less nearly related to the mother-tongue in a miniature course of "Comparative Grammar.")

What then is the advantage of the bilingual child? Let us imagine a child blessed before birth with the destiny of being bilingual, but granted the power of choice as to what should be his two languages: he will presumably choose those two languages which give him access to the greatest wealth of literature (including technical literature) and contact with the largest number of civilized persons.¹ For his first language he would probably choose English, since more people are able to speak English, and more books are printed in English than in any other language. For his second language he might choose German, since that would give him the greatest wealth of scientific and technical literature outside English; or, if his interests were likely to be literary rather than scientific, he might choose French; or if musical and artistic, perhaps Italian. On the whole he might prefer, if allowed, to leave the choice of his second language until after he was born. In other words he would choose to be an Englishman and desire that the option of a second language should be included in his school curriculum.

The essential difference between a unilingual and a bilingual boy is that the latter is, at the conclusion of his education, unilingual (or at best he has one and a half languages); whereas the unilingual boy is bilingual, for he is in possession of two languages each of complete utility. The English boy's one language serves for him two purposes,—it expresses "those dear and intimate things which are the very breath and substance of poetry and national feeling,"² and it serves also as a "means of intercommunication necessary for the maintenance . . . of touch with other countries, for the mutual interchange and stimulation of ideas in the sphere of scholarship and science." He adds to English a second language which still further increases his power of communication and exchange. The mother-tongue of the Chinn or Magh boy serves the first purpose only and that not well: he adds to it another language which, together with his mother-tongue, makes up no more than the one language which the English boy had to start with.

¹ Modern Studies, H. M., Report, 1918, page 58.

² Calcutta University Commission Report. V. para 27.

We have selected extreme instances, but the case of the less extreme instances is not essentially different. Bilingualism, in the sense in which we are here called upon to consider it, arises from the insufficiency of the mother-tongue. Welsh, Irish, Urdu, Bengali are for the "dear and intimate things" adequate means of expression; they are insufficient in the modern world as means of intercommunication. Hence those children whose mother-tongues they are, are compelled to become bilingual.

The exception to this argument would be the Franco-German border where the bilingual boy would be compelled to master two languages not in themselves ordinarily insufficient. This bilingualism due to "unstable political edges" is essentially different from that discussed above. The want to be supplied in the case of the second language is of what Bruel¹ calls a mere "courier" knowledge. This want need not involve any intellectual deficiency (as in the case of an English colony in Fiji), and it might be supplied without any intellectual gain, as in the case of a French-speaking Alsatian who acquires a "courier" knowledge only of German. If the child on such a "political edge" obtains more than a courier knowledge of the other language, his advantage or disadvantage, as compared with a unilingual child will depend entirely on the nature of the two languages involved, and on whether he would, in view of his special capacities and his future work in life, have chosen that other language in any case. In this special case, where the second language of a "political edge" would be the particular child's natural choice of a second language, and in this case only can we imagine any considerable advantage accruing to the child of a bilingual area as compared with the unilingual—for he would gain here greater opportunities of learning his second language in respect of its speech, pronunciation and common usage than those possessed by a boy living in a unilingual area, having similar language needs, but possessed of no other means of study than the thirtieth part of a teacher and one textbook.

This case, however, has obviously no application to the Bengali. The Alsatian derives his advantage from the fact that he lives in the midst of German-speaking people, and so obtains special facilities and incentives for practising the language in his everyday life. The Bengali does not live in

¹ Bruel, K., *Teaching of Modern Foreign Languages*, 1913, page 8.

no means a necessary although it is a very frequent concomitant of bilingualism—the foreign medium of instruction.

It is obviously possible to maintain that the Bengali should be bilingual, but yet that the spoken foreign medium of instruction should nowhere be used. The boy would be taught in Bengali (though some of his textbooks might even be English); and he would answer his examination papers in Bengali. This would not mean that he would be unable to speak or to write English, but that the writing and speaking of English would be treated as a separate subject. The distinction is in itself sufficiently simple, but how little it is actually made, how often there is confusion on the point, will be realised by glancing through the evidence printed in the Calcutta University Commission's Report.

Thus Professor A. Brown¹ argues that "if the vernacular be the medium of instruction and of examination, the student would be virtually cut off from every chance of access to the fountain-head of Western learning. He would never read an English book but would compel his teacher to confine himself to boiling down English authorities in vernacular notes." Yet the English student of Chemistry is taught in his mother-tongue and examined in his mother tongue, but is not cut off from the "fountain-head" of German chemical research.

Mr. J. W. Gunn² is in favour of the foreign medium because "under existing conditions a good knowledge of English is a matter of bread and butter. Moreover English is rapidly becoming the much needed *lingua franca* of educated India." One may imagine both these purposes being fulfilled without teaching History, Geography and Arithmetic in English.

"It struck me" said Mr. Orange at the Imperial Education Conference, 1911³ "in listening to Dr. Viljeon and Dr. Mackay that they had not laid emphasis on what we found it necessary to lay a great deal of emphasis on, that is the distinction between teaching a second language and using it as a medium of instruction." Yet, in spite of all emphasis, the confusion persists, and whenever the question of the foreign medium in the class-room or examination-room arises, it is met by a large amount of argument which refers generally to the in-

¹ Calcutta University Commission Report, X, page 344.

² Calcutta University Commission Report, X, page 399.

³ Report of the Imperial Education Conference, 1911, page 261. Mr. Orange was at one time Educational Advisor to the Government of India.

clusion of English as a school subject, rather than to its use as a medium of instruction in particular.

A striking instance of this is found in the debate on Mr. Rayanigar's resolution¹ in the Imperial Council in 1915. Mr. Rayanigar's resolution was in favour of teaching through the medium of the vernacular, but the speeches are to a very marked extent arguments concerning the retention of English as a subject. "In India" says Mr. Ghaznavi "where a diversity of language and creed prevails, it is the earnest desire of all patriotic men to push forward the knowledge of English which alone is the *lingua franca* between all sects." "All these results," says Sir Surendranath Banerjee, "have been achieved because the medium of our education has been the language of Macaulay and Burke." "Does he (the mover) want to envelop us in the gloom and darkness which prevailed in the country during the time when Lord Macaulay came to this country and which his great educational policy was instrumental in dispelling?" asks Rai Sitanath Ray Bahadur. Mr. Rayanigar never suggested the removal of English from the curriculum: his resolution concerned the medium of instruction in subjects other than English, and he might well have advocated this change in order, by saving time on the other subjects, to improve the study of English.

The use of a "Foreign Medium of Instruction" means the imparting of instruction to a pupil in a language other than his mother-tongue. In its ordinary meaning the Foreign Medium connotes especially oral instruction, and implies that the pupil's oral and written answers are in the foreign medium.

It is obvious that in any country in the position of Bengal the foreign medium is unavoidable in the educational system at some stage. It is unavoidable at the point where—

1. Vernacular reference-books and textbooks cannot be obtained.
2. The vocabulary of the vernacular is inadequate for discussion of the subject.
3. The members of the class and the staff of instructors are mixed,—Bengali and non-Bengali.

Probably no one would deny that, in the present condition of Bengal, in an M.A. or M.Sc. class the foreign medium is inevitably necessary (except perhaps for a degree in Oriental

¹ Gilchrist, R. N., *Indian Nationality*, 1920, page 67. Calcutta University Commission Report, 1919. II, page 239.

Languages): but below that point the question may be open to discussion. Ultimately the problem of the foreign medium, reduces itself to a question of age or class,—at what age, or at what point in the educational system, is the foreign medium unavoidably necessary for efficient instruction?

The problem is, however, complicated by the tendency of all important subjects to spread downwards in an educational system. A subject which keenly interests the parents cannot easily be segregated to any one part of the educational system, for parents are interested in the “end-result.” They want to see that the school is leading the boy on towards the realization of a plan for the future. Thus the parent who is going to send his son to the University wants to feel that the school course is conducive to ultimate success in the University course. No doubt this is true in England also, but less so because in England the schools have a reputation and confer a qualification of their own: whereas in Bengal the schools for the most part are regarded as mere stepping-stones.

There is in every educational system, a tendency for subjects to spread downwards, even apart from the psychology of the parents, for each higher educational institution demands certain qualifications in those who desire to be admitted to it; the next lower institution produces in the pupils those qualifications, and at the same time demands certain initial qualifications in the boys entering from the next lower institution, and so on *ad infinitum*. Each institution requires the groundwork to be done by some one else. Examinations tend to be forward-looking, to be qualifying rather than “leaving,” even when they are otherwise named. Hence schools tend to be “preparatory,” and curricula are designed with reference not to the present, but to some future need.¹

Thus in the present instance we may admit that at a certain stage of University work the English medium does appear to be necessary: but as a result of this the Intermediate College is called upon to give preliminary practice in the English medium, and again the boys preparing for the Intermediate College require preliminary practice for the English medium as used in the Intermediate College, and so on down even to the Middle English school.

In considering the opinions of the people of Bengal themselves on the foreign medium we must therefore remember that a certain proportion of these are not based on considera-

¹ See West, M., *Education, Selective Specific, Compensatory*, 1917.

tions of the actual needs at a given stage of the educational system, but on the needs at some higher stage and the desirability of preparing for that higher stage before it is actually reached.

OPINION AS TO THE FOREIGN MEDIUM IN BENGAL.

The evidence presented to the Calcutta University Commission may be summarised as follows:—

Opinion.	%	%	%
1. Positively in favour of the English-medium.	41.0	English 52.0	English 76.1
2. Ditto, except in the teaching of Vernacular or Sanskrit.	8.0		
3. Joint use of English and Vernacular medium.	23.2	Mixed 23.2	
4. Gradual replacement of English.	11.3	Vernacular 23.9	Vernacular 23.9
5. Definitely in favour of the Vernacular medium.	12.6		
Total number of witnesses 293			

TABLE 4.—The opinion of witnesses before the Calcutta University Commission on the desirability of the English Medium above the Matriculation.¹

Class 2 above may reasonably be combined with Class 1, since there are few so rigid in their advocacy of the English medium as to insist on its use in a lesson on Bengali or Sanskrit. Class 4 and Class 5 may be combined since it is obvious that any change would have to be gradual. Using this interpretation 53 per cent. are in favour of the English medium. This however probably hardly represents the actual situation. For the joint use of the English and Vernacular media represents the actual present practice of most teachers of ordinary "Pass" classes nominally using the foreign medium. It is often a useful device for the understanding of a difficult word or line in poetry, or of a technical term, to invite the

¹ Calculated from Calcutta University Commission Report, II, page 241.

class to discuss the translation or paraphrase of the word or words into Bengali, since this *ipso facto* analyses the meaning. The adherent of the English medium might therefore in his reply to the questionnaire of the Commission reasonably have been classified among those advocating joint use of English and the vernacular. Thus Classes 4 and 5 (24 per cent.) are the only two classes which represent a definite policy in favour of the vernacular medium throughout, and even of these one suspects that some at least are thinking of the graduate pass classes rather than of the honours courses and of higher degrees, and might hesitate if pressed on that point.

In the pre-Matriculation stage opinion is more evenly balanced.

	English Medium.	Vernacular Medium.	Optional.	Texts English: Teaching Vernacular.	Teaching English: Examination Vernacular.	Teaching Vernacular: Examination English.	Dual System of Schools	Number of Witnesses.
Muhammadan . .	63·6	33·3	3·0	..	..	..	..	33
Non-Muhammedan Indian.	32·4	55·4	8·1	0·9	1·4	0·5	1·4	222
European . .	60·3	35·3	2·9	..	..	..	1·5	68
Other . . .	(50)	(50)	..	..	..	..	..	2
All witnesses . .	41·5	48·9	6·5	0·6	0·9	0·3	1·2	No reply or ambiguous 34.

GRAND TOTAL . 350

TABLE 5.—The opinion of witnesses before the Calcutta University Commission on the desirability of the English Medium in the Pre-Matriculation stages.¹

The table should read thus:—63·6 per cent. of Muhammadan witnesses advocated the English medium.

¹ Extracted and calculated from Calcutta University Commission Report, Vol. X, pages 291—505.

It is curious to note that the Muhammedans who are undoubtedly the greater sufferers from the language situation—since their children have to learn at least one more language, and sometimes two more languages, than the Hindus—appear to be the stronger advocates of the foreign medium.

A small number of witnesses give details as to the age at which the use of the foreign medium should begin:—

Class.	Theoretical Age.	Percent Witnesses.
IV	10	7.1
V	11	3.6
VI	12	3.6
VII	13	35.7
VIII	14	21.4
IX	15	28.6
- Total number of witnesses		28

TABLE 6.—The opinion of witnesses before the Calcutta University Commission as to the age at which the English Medium should begin in Bengal schools.¹

Ultimately the question of the foreign medium is a technical matter, it is a matter best decided by those who best know what actually happens in the class-rooms; it is interesting therefore to collect from the mass of evidence published in the Calcutta University Commission's Report the opinions of the Headmasters of High Schools. Of twenty-one Headmasters, eleven advocate the English medium, eight the Vernacular, and two are unclassifiable. This corresponds closely to the proportions found in the replies of the European and of the Muhammedan witnesses.

The conclusion of the Calcutta University Commission² is that "the use of the English medium is excessive in the secondary schools to the detriment both of the pupils' education and of the rational use of both media."

¹ Extracted from Calcutta University Commission Report, II, page 287.

² Calcutta University Commission Report, V, page 33.

THE EFFECTS OF THE USE OF THE FOREIGN MEDIUM.

The Headmaster of the Hooghly Branch school gave witness before the Commission to the effect that the foreign medium "creates artificiality and constraint" in the class-room. Mr. Schmidt¹ consulted South African teachers and mentions forty as bearing witness to the increased interest of the pupils when the native medium is used. Maybell Bush² notes a similar phenomenon in regard to immigrants in America: it is also remarked on in U.S. Bureau of Education Bulletin on the Education of the Immigrant,³ and by Jadhava⁴ in reference to science students in India. The Hon'ble Mr. F. J. Monahan considers that the foreign medium "stunts and retards the intellectual development of a naturally gifted people";⁵ so also the Right Rev. H. Whitehead, (recently) Bishop of Madras. Loram⁶ attributes to it the high percentage of elimination from school in South Africa and in the Philippines, a phenomenon which is even more marked in Bengal and in India generally than in South Africa. M. Wandervollen,⁷ Government Inspector of Schools, Brussels, considers the foreign medium to be especially disastrous in the case of the teaching of "the things of the spirit." Loram⁸ quoting E. B. Sargent, "Report on Native education in South Africa" attributes to the foreign medium the phenomenon of Saturation, or failure to make further progress after early adolescence; he considers this to be due to the boy's inability to arrange and assimilate matter acquired in a foreign tongue, also to the failure of such teaching to create pleasure. Inability to study intelligently and parrot learning are attributed to the foreign medium by a Committee of teachers of the Anglesey Education Committee,⁹ by Schmidt,¹⁰ by Loram,¹¹ by Skelton.¹² The South African teachers (noted by Schmidt) and J. N. Sarkar¹²

¹ Schmidt, C., Unpublished thesis, University of Oxford.

² Bush, Maybell, "First School days of a Non-English child."

³ "The Education of the Immigrant," U. S. Bureau of Education, Bulletin, 51.

⁴ Jadhava, G. M., Science for Indian pupils, Times Ed., Supp., Aug 4, 1923, page 365

⁵ Calcutta University Commission Report, X, page 438. See also Whitehead, Right Rev. H., Indian Problems, 1924, Ch. X.

⁶ Loram, C. T., Education of the South African Native, 1917, pages 123-4.

⁷ Williams, J. G., Mother-tongue and Other tongue, 1915, page 10.

⁸ *Op. cit.*, pages 221-223.

⁹ Imperial Education Conference, 1911, page 254.

¹⁰ *Op. cit.*

¹¹ Skelton, O. D., The Language issue in Canada, 1917, page 6.

¹² Modern Review, Jan. 1918 (XXIII, No. 1). See also Saer, D. J., Smith, F., and Hughes, J., The Bilingual Problem, 1924, page 56.

comment on the lack of originality induced by the foreign medium. "We are an army of mediocres" says Mr. J. N. Sarkar. The evidence of the witnesses of the Calcutta University Commission's Report as to the detailed effects of the foreign medium is thus not unconfirmed by the experience of other countries—Belgium, Canada, South Africa, Wales, the Philippines. The effects noted are:—

1. Lack of responsiveness in the class.
2. Lack of interest.
3. Saturation and inability to assimilate.
4. Lack of ability to read and study effectively.

Parrot learning.

5. Lack of originality.

And more generally—

6. Retardation of boys in their progress and premature elimination of boys from the schools.¹

THE MEANING OF THE TERM "FOREIGN MEDIUM."

It is remarkable that in spite of these evils, so generally known and so obvious to those who have first-hand experience

¹ We have purposely omitted the point that the foreign medium is said to produce a greater degree of fatigue in the pupil. It is not improbable that this may be the case, given an equal amount of learning in an equal time, but we consider that the available experimental evidence is inconclusive or unreliable, and that it would be impossible to obtain reliable evidence on the point.

Mr. Schmidt*, experimenting with 18 pupils, set seven to write a Welsh essay and eleven to write an English (foreign medium) essay: each essay period was of one hour. He required two minutes cancellation of the letters K and T before and after, and found an improvement of 10.4 per cent. in the case of those who wrote English, against 31.6 per cent. in the case of those who wrote Welsh. Unfortunately the average initial score of those who wrote Welsh was 11 per cent. lower than that of the English group. In view of Arai's† work it is doubtful whether one hour of work would produce so great a difference. We might suggest that the group with the lower initial score found it easier to improve, that transference of attention may have been more difficult after the English, or that the Welsh had a greater "Warming up" effect. King‡ finds the fatigue effects of a day's work by school children to be practically nil. Starch§ summarizes the results of experiments on fatigue up to 1918 in the words, "Practically all of the investigations here mentioned that were carried out reliably agree, when interpreted fairly, in showing that efficiency in the various functions examined is changed very slightly or inappreciably during the course of a school day."

It is obvious, therefore, that little or nothing can be deduced from the fatigue effect of one hour, and that any experimental determination of this point would be difficult, if not impossible.

* Schmidt, O., Unpublished Thesis, University of Oxford.

† Arai, T., Mental Fatigue, Teacher's College Columbia, 1912.

‡ Thorndike, E. L., Educational Psychology 1914, Vol. III, page 93.

§ Starch, D., Educational Psychology, 1918, page 172. See also Muscio, B., "Is a Fatigue Test possible?" British Journal of Psychology, XX/1, June 1921, page 31.

that the multiplication of further evidence would be superfluous, the opinions of the witnesses before the Calcutta University Commission are so evenly balanced. We can explain this only by supposing that not all the witnesses were thinking of the same thing, and a detailed examination of the evidence confirms this supposition.

There are four aspects from which the foreign medium may be considered, the Lecture, the Discussion, the Texts, the Examination. Allowing for all variations it is therefore possible to connote fifteen different concepts in the words "Foreign medium."

We may eliminate the seven improbable cases:—

Lecture.		Discussion.		Text.	Examination.
1.	V	F		V	V ₁
2.	V	F		F	V ₁
3.	V	F		V	F
4.	F	V		V	F
5.	F	F		V	F
6.	F	F		F	V
7.	V	V		V	F

V—Vernacular Medium. F—Foreign Medium.

The following possibilities remain:—

Lecture.		Discussion.	Text.	Examination.	Example.
1.	F	V	V	V	A foreign lecturer in a vernacular institution.
2.	V	F	F	F	A vernacular lecturer in a foreign-medium institution.
3.	V	V	F	V	A vernacular text is unavailable; or foreign literature is being studied.
4.	F	F	V	V	A foreign lecturer in a vernacular-medium institution.

Lecture.	Discussion.	Text.	Examination.	Example.
5.	V	V	F	Vernacular medium teaching of one subject in a foreign medium system of education.
6	F	V	F	A foreign lecturer on a text in his own language in a vernacular-medium system.
7	F	V	F	A very conceivable method of teaching in a foreign medium system, vernacular debate to ensure understanding.
8.	F	F	F	The present system.

All these are conceivable, possible, and in many cases actual forms of procedure, and an advocate of the foreign medium may have in his mind any one or more of them.

THE USE OF THE FOREIGN MEDIUM IN THE EXAMINATION.

The motives for having the examination in a foreign tongue are:—

1. That the foreign tongue is the natural vehicle for the ideas concerned.
2. That the examination may act as a test of proficiency in that language.
3. The establishment of interprovincial or international standards.

As regards the first point in its application to the school,—in order to discuss an advanced scientific topic it might be more convenient to use English, for the vernacular would be so interlarded with imported words as to present a grotesque appearance; on the other hand any advanced worker would presumably be a man of more than average ability and would consequently be fairly well conversant with English. At any lower stage where the ideas are more simple, it is possible or even probable that, with the aid of a few imported words, the ideas could quite readily be expressed in the vernacular. As regards the second point, namely that the examination should

act as a test of language, it is a fundamental of examination theory that one thing at a time should be tested.¹ It is not possible to estimate accurately the Mathematical progress of the schools of Bengal if boys are to be marked wrong for misspelled correct answers. Not that this is actually done; on the contrary the examiners as far as is possible tend to neglect the English in a paper which is not itself specifically a test of English, so long as it is sufficiently intelligible. In so far as this is done, the examination is valueless as a test of language; while on the other hand in so far as this is not done, it is valueless as a test of the subject, (Arithmetic, History or whatever it may be).

It may however be argued that the value of examination in the foreign medium consists in the fact that it encourages the use of the medium in school work. Yet this argument is not valid since the school adopts the same system as the examination, namely that of accepting right facts in wrong language: thus in both cases the effect is to encourage the boy to write incorrectly, and to furnish him with practice in the art of doing so.

As regards the third point, establishment of interprovincial or international standards, so long as the foreign medium is not perfectly known by the examinees, an examination can be better standardized interprovincially in the vernacular medium. A matriculation stage comparison of Bengal and the Punjab in respect of History by means of an examination answered in English must necessarily yield an impure score: the mark 50 might mean knowledge of half the facts and ability to express them, or knowledge of all the facts and ability to express half. It is only in the higher stages where the language has ceased to be any obstacle that an examination in a foreign medium can be used for this purpose.

THE USE OF THE FOREIGN MEDIUM IN ORAL CLASS-WORK BY THE BOYS.

The motive in requiring the boy to answer orally in the class in the foreign tongue is to give him practice in speaking the language. It is however to be noted that, since in the Calcutta Matriculation there is no test of ability to speak

¹ See the Glossary "Pure" (test) and Chapter 6 below.

English, there is no special examination-reason for the practice. From the practical point of view it is often advantageous for a boy, especially in the middle-class occupations, to be able to speak English—though his occasions for speech would not ordinarily involve the vocabulary of school subjects. But we may here also join Mr. J. A. Richey¹ in considering this use of the foreign medium more likely to produce wrong habits of speech than to give useful practice, since, as has been shown above, it is not possible for a teacher to reject the right answer wrongly expressed; and thus wrong methods of expression are practised and encouraged.

Not only is the employment of the foreign medium in oral class-work useless for the purpose for which it is intended, but it is actually detrimental in other respects. O'Shea reminds us that by making a child speak in an unfamiliar language we set him back to the stage of infancy: "Let any adult attempt to express himself upon any familiar subject in a foreign tongue of which he is not thoroughly master, and he will show some such confusion and inhibition as does the child who is just beginning his work in composition."² The baby's lack of thought is as much due to lack of speech—that is, lack of the implements of thought,—as to lack of thinking power. The foreign medium prevents a boy from thinking freely; and in not a few cases it makes it impossible for him to think at all.

THE USE OF THE FOREIGN MEDIUM IN ORAL CLASS-WORK BY THE TEACHER.

The use of the foreign medium by the teacher has the advantage of accustoming the boy to the sound of the foreign language. In schools the use of the foreign medium by the teacher in his discourse is not, as in the University, a matter of actual necessity, but it is perhaps used with the idea of giving practice in following instruction in the foreign medium to those boys who will go on to the University, and of giving a training to all in the understanding of English speech.

By making the boy speak and write in the foreign medium actual harm may be done by encouraging wrong habits of

¹ Calcutta University Commission Report, X, page 452.

² O'Shea, M. V., *Linguistic Development in Education*, 1907, page 266.

speech and writing: by making the boy listen to teaching delivered in English, there is no such likelihood of actual harm save in so far as the speech of the teacher is incorrect. The evil lies rather in the loss of time, and in the pupils' imperfect grasp of the ideas presented.

It is possible to make some experimental estimate of the amount of loss in efficiency of a lesson owing to the employment of the foreign medium by the teacher in his exposition. No absolute figure is, of course, possible since the effect of the foreign medium must necessarily vary according to the proficiency of the class in the foreign language, the nature of the lesson which is being taught and the skill of the teacher. We may, however, select a class, subject and teacher which are all exceptionally favourable to the foreign medium, and endeavour to discover what is the minimum amount of loss under these exceptionally favourable conditions.

For the school the best Government school in the town was selected; for class, the pre-matriculation class, and for teacher the professor of educational method of the Training College.¹ For subject some topic was required which would offer no difficulty as to idea or as to vocabulary, but which would be unfamiliar to the class, since otherwise any measure of the ideas obtained by the class from the lesson would be vitiated by the possibility of previous knowledge being employed in answering the questions. The subject selected was "Civics."

The lesson was divided into two parts, (1) The Origin of Societies, and (2) The Duties and Rights of a member of Society. Each part of the lesson consisted of a brief lecture (of equal length in each part) followed by questions. The questions were written on the black-board and the answers were written by the boys. The class was divided into two sections. In the first section of the class the first half of the lesson was delivered in Bengali, the questions on the black-board were written in Bengali, and the boys' answers were also written in Bengali; the second half of the lesson was delivered in English and the questions were set and answered in English. The lesson as delivered in the first section of the class was taken down verbatim in the class-room. This verbatim report was used in the delivery of the lesson to the second section. In this section the previous procedure was reversed, the first half

¹ Babu Gurubandu Bhattacharya, a teacher of very exceptional skill.

of the lesson being delivered in English, with questions and answers in English, and the second half in Bengali with questions and answers in Bengali.

The percentage of questions correctly answered by the boys was taken for the measure of the effect of the lesson.

The result was as follows:—

	Section A of the Class (24 boys) Per cent. answers correct.	Section B of the Class (19 boys) Per cent. answers correct.	Difference.
Part I of the lesson . . .	Bengali 67·5%	English 35·0%	32·5%
Part II of the lesson . . .	English 46·7%	Bengali 76·7%	30·0%
Difference	20·8%	41·7%	Mean 31·5% difference.

TABLE 7A.—Results of an experiment on the effect of the use of the Foreign Medium in Oral class-work by the teacher, and in their answers by the pupils.

It appeared that a part of the inferiority of the result in the English portion of the lesson might have been due to the inability of the boys to express their ideas in English. In other words the above result is, in a sense, a composite measure of ability to comprehend and of ability to express.

An attempt was therefore made to eliminate the factor of expression. The experiment was repeated in exactly the same way, but on this occasion *all* the answers were required to be in Bengali. A fresh lesson was devised for this purpose, the first part being on 'Ancient and Modern Village Life,' and the second on 'Principles of Village Sanitation.' The lesson was written out *in extenso* beforehand and the written draft was followed word for word in the class-room. A score of the teacher's rate of speech was made every few minutes and variation above or below the normal (80 words per minute) was communicated to him: the variations were slight. One half of the lesson was delivered in English and the other half in

Bengali; the questions in one half were in English and in the other half in Bengali. The result was as follows:—

—	Section A of the class (28) Per cent. answers correct.	Section B of the class (16) Per cent. answers correct.	Difference.
Part 1 of the lesson . . .	English 26·8%	Bengali 52·1%	25·4%
Part 2 of the lesson . . .	Bengali 50·0%	English 34·8%	15·8%
Difference . . .	23·8%	17·3%	Mean difference 20·6%

TABLE 7B.—Results of an experiment on the effect of the use of the Foreign Medium in Oral class-work by the teacher (the pupils' answers being given in the vernacular).

It appears from the above that difficulty of expression accounts for 10·7 out of the total difference of 31·3, or about one-third. Thus the net loss in the efficiency of the lesson due to the use of the foreign medium by the teacher (the conditions as to class, subject and teacher being ideal) amounts to 20·6 per cent.

A loss of this magnitude under such ideal conditions is a serious matter. In the case of a boy who is going to the University the necessary practice in listening to lectures could probably be given more effectively in a special class at the Intermediate stage when the art of *précis* might simultaneously be taught. In the case of others specific practice in conversation on ordinary matters involving an "every-day" vocabulary would be more effective as well as more economical for producing speech and hearing ability in those cases in which these abilities are actually required.

THE FOREIGN MEDIUM IN THE TEXTBOOK.

The case is very different with regard to the use of English textbooks in Bengal. There is here no apparent evil unless it be a loss in point of speed of study and an increase in fatigue. It is certainly not legitimate to attribute "parrot-learning" to the use of foreign textbooks apart from the foreign medium in oral and written work in the class and in the examination. The boy learns by heart because he has to reproduce not only the ideas but also their expression: abolish

the English medium in class answers and in the examination, and the motive for learning by heart no longer exists. It is much easier to memorize ideas than the actual words in which they are conveyed, and if the foreign words have not to be reproduced there is no reason for memorizing them. On the contrary, the use of a textbook written in a foreign language is likely to be a preventive of "parrot-learning" if the examination is in the vernacular, since the actual words of the textbook *cannot* be used in the examination; they must be transmuted into the mother-tongue, and in this process must necessarily be analysed and absorbed as ideas.

The absence of vernacular texts is an argument frequently used against the vernacular medium. It is for the above reason a weak argument, for it is possible to lecture in the mother-tongue, to require the boys' answers in the mother-tongue, and yet have the textbook in English. The advantages of this procedure are many:—

1. The boy obtains practice in reading English and in gathering ideas from English books. Since the informative and technical literature of Bengali is extremely limited,¹ while that of English is the largest in the world, the power of studying an English textbook is very valuable and necessary to a Bengali boy.
2. Since the publisher of a book written in English can command the best of the talent available in England, America, Canada, Australia (not to mention smaller English-speaking countries), as well as that available in all parts of India, he has a greater opportunity of getting the best author for his book. The publisher of a book written in Bengali is limited to authors living in Bengal, and translations are not often very satisfactory.
3. The publisher of a book written in English may sell his books in all parts of India, as well as in all English-speaking countries. His potential sales being so very much larger, he can afford to produce a very much better book at a given price.
4. For a similar reason, there is a far greater range of choice among books written in English than among books written in the Vernacular.

¹ Vide Chapter 5 for actual details on this point.

The disadvantages are:—

1. The possibility that the boy may not understand the text. This is easily overcome by the teacher since the teaching is in the vernacular: given a good textbook, most teaching resolves itself into ensuring that the boy understands it.
2. The possibility that it may take the boy a longer time and a greater effort to master a book written in a foreign language. Let us assume the length of the textbook in History for one year's work, 177 periods of $\frac{3}{4}$ hour, to be 70,000 words.¹ We find (from observations recorded in Chapter 6 below) that the Bengali boy of Class VIII reads English at the rate of about 70 words per minute, whereas the Anglo-Indian girl of the same age reads English at the rate of about 150 words per minute. Then the actual difference in reading-time is, on 70,000 words, a matter of nine (8·9) hours, or twelve school periods in a total of 117 periods,—that is 10 per cent. of the total time. In the Matriculation class (age 16) the difference is less, amounting to only 7 per cent. of the total time. Thus the loss of time, taking the most unfavourable subject and textbook, is 10 per cent., a very small price to pay for the privilege of using the best textbook and of being initiated into the largest reference library on the subject.

BILINGUALISM AND INTELLIGENCE.

It is necessary at this point to consider certain enquiries which have taken place of late into the relation of bilingualism and intelligence in Wales, because we believe that, valuable as those researches are, they are apt to be misinterpreted as to their bearing on this subject.

In presenting these results it is useful to adopt the following notation, as being simpler than that employed by Saer.

Let E—mean Monoglot English, and W mean Monoglot Welsh.

Let WE—mean a child whose mother-tongue is Welsh, but who has subsequently learned English and can use it with equal efficiency.

¹ This is the approximate length of Ramsbotham, R. B., Class-book of Indian History.

Similarly EW— means a child whose mother-tongue is English, but who has subsequently learned Welsh and can use it with equal efficiency.

Let *e* { mean English as a secondary, less efficient
and *w* { language than E.
 { mean Welsh as a secondary less efficient
 { language than W.

Then *We* means the same as *WE* save that the English is not as efficient as the Welsh, and ' *We* ' implies an even lower degree of efficiency in respect of English.

Thus we have three grades of efficiency *E*, *e*, *e*, and similarly *W*, *w*, *w*. The first letter in order means the mother-tongue, and second letter refers to the second language.

Saer¹ finds in respect of vocabulary that the monoglot English and Welsh-English bilingual are, in order of superiority, as followed—*E*, *We*, *We*; and that, on the basis of a few cases only, *WE* is superior to all the above in Urban areas; that in respect of intelligence as measured by the Stanford Binet-Simon scale (*plus* Burt's additions), the median Intelligence Quotient of:—

1. Urban <i>WE</i> , <i>wE</i> is	. . . . . 100
Urban <i>E</i>	. . . . . 99
2. Rural <i>E</i>	. . . . . 96
3. Rural <i>WE</i> <i>We</i>	. . . . . 86

Thus urban *WE* and *E* show no appreciable difference, while Rural *E* is distinctly superior to Rural *WE* *We*.

Saer writes, "In rural Welsh-speaking districts we find other conditions. The mother-tongue here is used in play and is the language most generally used and best comprehended;" and, "In urban districts . . . we find children whose parents speak to each other in Welsh and teach Welsh to their children first; but when the children play with other children, who generally speak English, they begin to answer their parents in English. Before long the parents generally converse in English with their children; their

¹ Saer, D. J., "An Inquiry into the Effect of Bilingualism upon the Intelligence of young children," *Journal of Experimental Pedagogy*, VI/4/, March 1922; VI/5-6/, June—December 1922. See also Saer, D. J., Smith, F. and Huges, J., *The Bilingual Problem*, 1924.

knowledge of Welsh ceases to develop, and their mother-tongue becomes a sorry patois."¹

We gather from these quotations that the Urban bilinguals tend to be more largely *wE*, while the rural bilinguals are more generally *We*. Thus the net conclusion appears to be that *E* and *wE* are superior to *We*.

Smith² using as tests Mutilated Passage, Incomplete Analogies, Word Forming and Free Composition, on *E*, *WE*, and *We* children, concludes that "Monoglot children between the ages of 8 and 11 make better progress in power of self-expression, choice of vocabulary and accuracy of thought."

Saer³ in a later communication finds Rural *E* superior to Rural *WE* (? *We*), and Urban *E* equal to Urban *WE* (? *wE*) in respect of the Stanford Binet-Simon Intelligence tests.

Using a Group Intelligence test with University students he finds that the standard of 75 per cent. *E* equalled the standard of 50 per cent. *WE*. A second test produced a similar result.

If these results mean that a bilingual existence exerts an actual deterrent effect on the development of natural intelligence (and this conclusion certainly seems inviting to many),⁴ we must conclude that, where such conditions exist, the mother-tongue must at all costs be made the medium of life and education. But before accepting a conclusion so far-reaching in its effects, we should examine the evidence more closely. In the first place it is to be noted that the Intelligence Test is to a very appreciable extent a measure of the development of language: Saer's⁵ correlations (Intelligence Quotient: Vocabulary) range from 0.32 at 9 years Rural, to 0.69 at 11 years Urban. (In the case of Welsh vocabulary the correlations are lower). Burt⁶ is emphatic on this point:— "While the Binet-Simon measurements, when age and intelligence are discounted, show little correlation with arithmetic marks, they still exhibit a pronounced and persistent correlation with the three linguistic subjects. Hence these latter subjects form no passive vehicle for the revelation of general

¹ *Op. cit.*, VI/4/, page 233.

² Smith, F., "Bilingualism and Mental Development," *British Journal of Psychology*, XIII/3/, Jan. 1923.

³ "The Effect of Bilingualism on Intelligence," *British Journal of Psychology*, XIV/1/, July 1923.

⁴ *E.g.*, *Times Educational Supplement*, 442, Oct. 6, 1923.

⁵ *Journal of Experimental Pedagogy*, VI/4/, pages 239-249.

⁶ Burt. C., *Mental and Scholastic Tests*, 1921, page 184.

intelligence. *Linguistic ability and linguistic attainments exert upon the Binet-Simon tests a special and positive influence of their own.*"¹

One meaning, therefore, of these results of Saer's work with the Binet-Simon Tests is that the unilingual child is superior in respect of linguistic ability to the bilingual, while Saer's conclusion in his previous communication was that the unilingual English is superior in vocabulary to the Welsh knowing a little English and the Welsh knowing a very little English. Now since in learning a foreign language a certain amount of time is spent in learning "another word for the same thing," when one might have been learning a new word for a new thing, this result is not surprising, and would apply also to a comparison of boys studying or not studying any foreign language at a secondary school, if other factors (the selective effect of courses, and transference of training) could be held constant. But there is a more fundamental criticism.

In order to establish the superiority of the unilingual we must prove that:—

E and W are superior to WE and EW.

and in less degree to We

eW

wE

Ew

whereas what is actually shown is the superiority of E to We and its equality with wE. Since the order of merit is,

E wE. We.

it appears at least possible that what the tests actually prove is that a boy born with English as his mother-tongue has a better opportunity for the development of his "Intelligence" than one who is born with Welsh as his mother-tongue. And since "Intelligence" is a mixed measure of linguistic, educational and natural efficiency, we need not herein be surprised. As regards linguistic efficiency English is an easy language, it possesses an enormous vocabulary, and books in it are cheap and numerous. As regards educational efficiency, Saer² says that *all* the cases measured had English as their school language. Burt³ shows that the Binet-Simon Mental Age is

¹ The italics are in the original.

² British Journal of Psychology, XIV/1/, page 26

³ Mental and Scholastic Tests, 1921, page 183.

composed of 0·54 School Attainments, 0·33 Intelligence, and 0·11 Chronological age. Since the Welsh-speaking children are being educated in English as a foreign medium and are therefore apt to suffer in their school attainments (see Tables 7A, 7B above), we might find in this alone a very large part of the causes of their inferiority in the results of the Intelligence tests.

What then do these enquiries go to indicate? That it is a disadvantage to be educated through a foreign medium, and that it is an advantage to have one of the major languages as one's mother-tongue.

SUMMARY.

We have seen that there is certainly no advantage in being born in a bilingual country, but rather a disadvantage. The disadvantage lies not so much in being bilingual but in possessing one of the minor languages as one's mother-tongue. Thus the Bengali boy when he has learned English is not so well off as the English boy when he has learned French. The boy who is below the average is at a greater disadvantage in a bilingual country, since he is compelled to learn a second language where ordinarily he would confine himself to the mother-tongue.

The other disadvantages are inherent rather in the use of the foreign medium than in bilingualism itself. It is not considered a disadvantage for an English boy to have to learn French at a secondary school, but it would be considered a disadvantage if he were compelled to listen to lessons and answer his teacher in French in all the subjects of the curriculum. The foreign medium is not a necessary part of bilingualism; on the contrary it is both unnecessary and actually undesirable even for the purpose for which it has been advocated (namely improvement of foreign speech and writing ability). As regards the foreign medium in respect of the language of the textbook the case is different. No actual disadvantages arise from this as regards production of inaccuracy of diction, parrot learning, etc. There is, at the maximum, a loss of 10 per cent. per annum of the time allotted to the subject (*viz.*, a loss, in the example chosen, of a quarter of an hour a week). There are very considerable advantages, in that the boy obtains a better textbook for the same money and receives valuable practice in the reading of the foreign language, without which power the whole literature of the subject other than his class textbook, would be closed to him.

In short, if a child's education is bilingual in its receptive aspect but unilingual in its expressive aspect, bilingualism is not necessarily a handicap.

CHAPTER 5.

An Analysis of the Bengali's need of English.

In discussing the Bengali's need of English it is very necessary to distinguish—

1. Those factors which are peculiar to the Bengali as distinguished from unilingual peoples.
2. Those factors which affect all Bengalis, not merely a few selected individuals of the upper classes.

Thus it has been argued that English is needed by the Bengali for international and interprovincial trade, for commerce and for direct discussion and intercourse generally with English-speaking persons. The same argument would apply to French and German in the case of the English boy (or to any second language in the case of any national): and it applies only to those who will be directly concerned with commerce, or who will actually have occasion to converse with a Frenchman or a German in his own language. It will not apply to the boy who will spend his life on a farm in Cumberland, or as a motor mechanic in Gloucestershire. It will not apply to the school population, either primary or secondary, as a whole.

Modern language teaching has suffered much from lack of exact analysis of the purpose of the teacher and the need of the taught. "In contemporary efforts to substitute scientific for faith values, early consideration should be given to Modern Languages. Public credulity as to their values is easily intrigued;" and hence, says Professor Snedden, there has been less compulsion to examine and present the case with exactness.¹

Professor Snedden suggests a survey to reveal what proportion of youths have any tangible result to show from their studies of this subject, and what proportion make any use of their gain. But we use many rather useless things merely because we possess them: it would perhaps be more profitable to enquire "What proportion of those who studied these languages had a genuine felt need of them, or were really likely to

¹ Snedden, D., *Sociological Problems of Modern Language Instruction in Public Schools*, *Teacher's College Record*, XXIII/1/, Jan. 1922.

have such a need?" and "What proportion of those who had such a need were enabled by the course (with a minimum of unnecessary and irrelevant labour) to satisfy it?"

So in this instance we have not to study "What use is it to some one else that the Bengali should study English?" nor "What reason is there for certain selected Bengalis to study English?" nor "What fictitious mirage leads some Bengalis to study English who would be better without it?" We have to study the genuine need (present or future) which justifies the average Bengali in studying English. And at a later stage we have to enquire whether the school course at present provided for him does enable him to satisfy that need with a minimum of wasted effort.

We may begin by admitting that the boy of better-class parents in a better-class school may have just those same needs of a second language as has an English boy in similar circumstances; he may need it because he is going into a business which requires it, or because he is going to travel, or for the sake of exploration of the history or literature of the foreign country, or as a social accomplishment,—this last being an instance of what Veblen¹ calls "Conspicuous Waste."

In a similar manner we may admit that for the sake of the peace of Europe it is desirable that the children of the more influential classes should possess a means of intercourse with neighbouring peoples; and that for the unity of India it is desirable that the influential Indians of various provinces should possess a means of intercourse.

All these arguments refer to the special case, to the boy of above-average intelligence, or of above-average social status, or both. They would be an argument for the optional teaching of English or for the teaching of English in a special class of higher grade schools. They are not arguments for the position actually occupied by English in the school system of Bengal to-day, as a compulsory subject, as the dominant subject, the subject which all who go beyond bare literacy are compelled to acquire.

We have to enquire why the vast majority of *average* Bengalis,—all who have any educational ambition at all,—are unable to get on without English, why English is necessary (if it is necessary) to the average boy, whose circumstances

¹ Veblen, T., *Theory of the Leisure Class*, 1899, Chapters III and IV, and *Theory of Business Enterprise*, 1912, page 325. See Glossary.

and intelligence in a parallel case in England would give no indication of the requirement of a foreign language or the time and ability to study it, to a boy never likely to go outside his province, never likely to converse with any non-Bengali (unless it be some official or commercial agent, who is required to know the language of the country as a part of his equipment). Such is the ordinary, the average case, of thousands of Bengali boys studying in hundreds of aided and unaided high schools in the *mafassil* of Bengal. With the exceptional case, the case of the few hundreds, who can afford to study what they please as an optional subject, we are not here concerned.

The reasons on account of which English was originally introduced into the educational system of Bengal and the Bengali's fundamental need of English are—or at any rate were at one time—presumably identical. The Despatch of 1854 has been described as the “*Magna Carta*” of English education in India, but nowhere do we find in it any mention of the “essential unity of India and English as its bond,” nor of “international and interprovincial trade and communication,” nor of English as the “*lingua franca*” of India.

The fundamental reason for the adoption of English in the educational system of Bengal was the absence of a sufficient Bengali literature. Other considerations have since arisen: other arguments have overshadowed the first problem, but in its origins the problem was no more than this—that, at the time when the beginnings of education in Bengal were made, there did not exist in the Bengali language, so far as the promoters of that education were aware, the materials for a sufficient culture. Macaulay's statement of the problem is characterised by his usual directness “How then stands the case? We have to educate a people who cannot at present be educated by means of their mother-tongue. We must teach them some foreign language.”¹ The controversy was between English and Sanskrit, but the motive in both cases was the same, the enrichment of the vernacular; Sanskrit was needed to enrich the vernacular as a means of expression; English was needed as a source of material. Both sides admitted the premises—that the vernacular (as it was then) was an insufficient medium for education, and that the educational system should aim at its gradual improvement.

¹ Sharp, H., *Selections from Educational Records*, I, page 119.

THE CONDITION OF BENGALI LITERATURE AT THE BEGINNING OF THE NINETEENTH CENTURY.

The situation can be realised by reviewing the condition of Bengali literature at the beginning of the Nineteenth century.

The case is set out very clearly by Dr. S. K. De, a writer by no means disposed to underestimate the present riches of the literature of his country. When Carey landed in Bengal (1793) "Bengal had a language and a literature of its own . . . but this language had decayed and the literature had been forgotten. There was hardly a printed book; manuscripts were rare, and all artistic impulse or literary tradition was almost extinct."¹ Bengali was actually first printed in 1778,² but Carey found the cost prohibitive when he made enquiries in reference to the printing of his translation of the Bible; and he eventually printed it himself in 1801. Of prose literature before the nineteenth century there was practically none. There are prose passages,³ but, in the words of Dr. S. K. De, "Before 1800 it may be doubted whether . . . there is a single Bengali prose work of any importance which unites the bulk and the literary quality of a book proper."⁴ "Indeed," writes the same author, "the achievement of early Bengali prose is not only very late, but speaking generally, it amounts to almost nothing."⁵

There was not even a standard of orthography. Foster⁶ in the preface to his Vocabulary, complains that "There never having been a native Bengali grammarian nor indeed any author of note who might be considered as standard, the orthography consequently has never been fixed; and being current over an extensive country and among an illiterate people, almost every word has been or continues, in one district or another, to be variously spelt."

Nor yet was there a standard of vocabulary, for the current vocabulary was hopelessly confused, and the Sanskrit vocabulary was not current. "A Grammar of the pure

¹ De, S. K., *Bengali Literature in the Nineteenth Century*, 1919, page 156.

² *Ibid.*, page 81.

³ Mitra, S. R., *Early Bengali Prose*, 1924.

⁴ De, S. K., *op. cit.*, page 277.

⁵ De, S. K., *op. cit.*, page 455.

⁶ Foster, H. P., "A Vocabulary in two parts, English-Bengalee, and vice versa," Part I, 1799; Part II, 1802. The passage is quoted in De, S. K., *op. cit.*, page 92. So also William Carey:—"We have in a manner to fix the orthography and my pundit changes his opinion so frequently." Carey, S. P., "William Carey," 1923, page 189.

Bengalee dialect," writes Halhed,¹ "cannot be expected to convey a thorough idea of the modern jargon of the kingdom. The many political revolutions it has sustained have greatly impaired the simplicity of the language, and a long communication with men of different religions, countries and manners has rendered foreign words in some degree familiar in a Bengalee ear." There were at this period four different styles of prose and four different prose vocabularies,—the Pouditi, the Adaloti, the Cholit and the Sahebi.²

A wealth of poetry indeed there was, but a great part of it had been lost or forgotten. When Carey visited Nadiya,³ the main seat of Bengali learning, he found only 40 separate Bengali works all told.⁴

Granted these data—very little printing, almost no prose, no standard of vocabulary, nor of spelling, and a large part of the poetry lost and forgotten, we may better understand Macaulay's statement that the Bengali could "not at present be educated by means of his mother-tongue."

The Policy of Filtration may have had some effect, but the Missionaries were mainly responsible for the rapid development which took place in this situation.

The Rev. J. Long⁵ shows the publications of Bengali books in 1820 as:—

Fiction	4
Language	1
Miscellaneous (Amatory)	5
Poetry and Mythology	9
Religion	3
	—
	22
	—

Almanacs, Medicine, Ceremonial Impurities (number not stated).

¹ Halhed, N. B., Preface to "Grammar of the Bengalee language," 1778; De, S. K., *op. cit.*, page 87.

² See the Glossary for the meaning of these terms.

³ See Glossary.

⁴ Smith's Life of William Carey, 1912, page 274. De, S. K., *op. cit.*, page 54.

⁵ Selections from the Records of the Bengal Government, No. XXXII, "Returns relating to publications in the Bengali language in 1857," date 1859, page 77.

From 1822 to 1826 we find the following output:—

Drama	1
Fiction	4
Language	2
Law	1
Miscellaneous	6
Philosophy	1
Poetry and Mythology	9
Religion	4
	—
	28
	—

The increase in 1857 is very marked:—

1. Art	0
2. Biography	5
3. Drama	8
4. Fiction	37
5. History and Geography	19
6. Language	47
7. Law	3
8. Medicine	5
9. Miscellaneous	33
10. Philosophy	0
11. Poetry (and Mythology)	74
12. Politics	2
13. Religion	78
14. Mathematics	2
15. Natural Science	9
16. Travel	0
	—
TOTAL	322
	—

TABLE 8.—Books published in the Bengali language in Calcutta in 1857 (reclassified under the headings of the Bengal Library.)¹

¹ Extracted from Long, Rev. J., Returns relating to publications in the Bengali language, page VII.

A considerable portion of this list is of almost negligible educational value: "Miscellaneous" consists largely of Almanacs and Occultism; "Mathematics" consists of two elementary primers on *Dharapat* (Mental Arithmetic). The educational books which compose the largest item of the actual total issue (number printed) are almost entirely, if not entirely, of the primary grade. Of a listed issue of a total of 527,470 copies, 149,250 or 28 per cent. (Almanacs and Erotic) may be set aside as of no educational value. Educational books, mostly primers, are also 28 per cent.; Natural Sciences are 2,250 or 0.4 per cent.¹

We have here the materials of a Primary education; the boy can be made literate and given access to the poetry and mythology of his mother-tongue. But in respect of scientific and technical knowledge, of geography and of the history of the rest of the world other than Bengal, his education has unlocked for him the door of a very sparsely furnished room.

The rightness of the decision of the early educationists of Bengal cannot be disputed. They did not despise the literature of Bengal; on the contrary, though they knew less of it than was later known, they paid it rather greater honour. They realized that a people cannot be divorced from its language and literature; but they realized also the deficiency of that literature in respect of those departments of exact knowledge on which modern civilisation is founded. There must be some window through which these new ideas could enter and refresh the atmosphere: that window was the English language. They hoped that eventually, for the bulk of the population, Bengali literature would become sufficient in all departments of knowledge. There would always be the few who had the opportunity, the money and the ability to study a second language, but in time Bengali would become so enriched that this would be more and more of a mere luxury, and those less fortunate would be very amply provided.

We have to examine whether these aspirations have been justified.

Let us suppose that all "average" Bengali boys of to-day (*viz.*, about 60 to 70 per cent., all in fact who cannot afford as regards time, money and capacity a reasonably expensive and efficient secondary education) were confined to their own language for their culture, and let us review what materials

¹ Long's own classification is used here.

of culture would actually be at their disposal. We may admit at once that in respect of classical literature, poetry and religion they would be sufficiently provided. We must enquire what else they would possess. In making this enquiry it must be remembered that in those remaining subjects to which attention must specially be directed, books rapidly become out of date, and hence we must devote attention rather to the continuity of the supply than to the cumulative amount.

INVESTIGATION OF THE OUTPUT OF VERNACULAR LITERATURE IN BENGAL.¹

The tables below were prepared from the Catalogue of the Bengal Library. This Catalogue includes all books published in Bengal, but we are concerned only with those written in the Bengali language.

The only nearly complete bound copy of the Catalogue is that of the Imperial Library, and from that five issues are missing between 1910 and 1923 (*viz.*, two in 1914, one in 1919, one in 1920, one in 1923). The five missing copies represent one and a quarter years' output. The total has been estimated by averaging adjacent quarters, but in calculating average output 12.75 has been made the divisor instead of 14.

Table 9 shows the mean annual output of books on various subjects (as classified in the catalogue) from 1910 to 1923 inclusive. It will be observed that these hypothetical unilingual students will be well supplied in Fiction, Language, Miscellaneous, Poetry, Religion. (Language is swollen by a large number of elementary textbooks.) They are badly off in respect of Law, Philosophy, Politics, Natural Science, Travel. In Law and Philosophy a large output would hardly be expected; but, both relatively and absolutely, the output in scientific and technical subjects appears to be extremely meagre.

Subject (Bengal Library heads).	Total.	Mean per annum. (12½ years)
1. Art	380	30.5
2. Biography	333	41.8
3. Drama	738	57.0

¹ With Probodh Deb Choudhury.

Subject (Bengal Library heads).	Total.	Mean per annum (12½ years)
4. Fiction	2,123	166.5
5. History, Geography	1,115	87.5
6. Language.	4,596	360.5
7. Law	80	6.3
8. Medicine	541	42.4
9. Miscellaneous	2,383	190.0
10. Philosophy	17	1.3
11. Poetry	1,245	97.6
12. Politics	63	4.9
13. Religion	2,030	206.3
14. Mathematics	705	55.3
15. Natural Science	127	10.0
16. Travel	84	6.6
GRAND TOTAL	17,360	

TABLE 9.—The number of books published in the Bengali language 1910 to 1923 inclusive (classified under the headings of the Bengal Library).¹

This apparent deficiency of Technical, Scientific, and informative literature generally is worthy of further investigation.

THE DEFICIENCY OF INFORMATIVE LITERATURE IN BENGAL.

Mere school textbooks do not constitute an education or a literature. It is possible at comparatively little trouble and expense to produce a set of school textbooks in any language on any subject, but the task is idle, as Grant pointed out more than a hundred years ago,² if the education imparted by

¹ NOTE.—This omits five quarterly issues (*viz.*, two in 1914, one in 1919, 1920, 1923) of the catalogue, which were unobtainable. The estimated number of books omitted is 1,037, thus the total should be 19,350 approximately. The means are unaffected, as the 12½ years' average is shown.

² See Chapter 2, above, pages 22-23.

these textbooks ends with the last page of the textbook and gives access to nothing beyond. Hence in discussing the language problem in Bengal, the existence or non-existence of mere textbooks, the possibility or impossibility of producing them, is an argument of no weight whatsoever on either side of the controversy. The fundamental point which we have to consider in estimating the value of an education is "To what does it give access? What further opportunity of learning does it confer? What will there be for the boy to read after he leaves school? What information will he be able to acquire in his leisure time, or what technical books will he be able to consult?"

The argument is frequently adduced that, were the vernacular made the medium of instruction in a subject, a vast output of vernacular literature in that subject would result. This would be and actually is the case as regards textbooks: but it is not the case as regards other books not directly intended for school use; nor is it clear why these other books not intended for school use should be in any way affected. The boys can read their vernacular now; they can read it with greater ease and pleasure than English: if there were a demand, and if the books could profitably be produced, they would be produced now.

In considering the literature now available, other than textbooks for the schools, we shall not therefore be justified in anticipating any large increase in output as a result of the introduction of the vernacular medium—unless of course the introduction of the vernacular medium involves also the discontinuance of the use and teaching of English in any form; and this is not seriously proposed by anybody.

We are therefore to consider what technical and scientific literature, other than school textbooks, will be available as reading matter to a Bengali who has left school after being educated unilingually in his vernacular. We may assume that any book which is more than 25 years old in most of these informative and technical subjects is so out of date that it is practically useless: we shall therefore investigate only the last 25 years or so.

After consideration of various types of classification, that of Cutter¹ has been adopted, as being the most convenient for our particular purpose. The technical and scientific headings only were taken. Geography was excluded in order

¹ Brown, D., *Library Classification and Cataloguing*, 1916, page 64.

to lighten the labour, as the entries of primary texts under this heading are very large. Medicine has been excluded on the ground that access to English will always be essential to a medical man trained on Western lines, and the works of Ayurvedic medicine are incapable of classification.

Subject	1897-1909	1910-1923	Total.
<i>Sciences.</i>			
1. Physics	6	3	9
2. Chemistry	2	4	6
3. Astronomy (excluding Astrology).	4	11	15
4. Natural History and Botany .	3	14	17
<i>Arts.</i>			
1. Technology	4	6	10
2. Fabricative and Industrial Arts .	9	12	21
3. Extractive Arts	0	4	4
4. Metallurgy and Mining . . .	0	3	3
5. Agriculture	26	35	61
6. Sericulture.	0	3	3
7. Animalculture	6	10	16
8. Electric Arts	0	2	2
9. Domestic Arts	13	13	26
10. Engineering	2	3	5
11. Photography	2	3	5
12. Recreative Arts	34	25	59
13. Painting and Drawing. . . .	1	5	6
14. Decorative Arts	1	13	14
15. Business and Commerce . . .	2	8	10
TOTAL .	115	177	292

TABLE 10.—Technical Books (of a serious nature, *viz.*, other than Junior Texts) published in the Bengali language 1897-1923 inclusive (5 quarters omitted), *viz.*, 25½ years.

Decorative Arts.—The entries consist of thirteen books on fancy and plain sewing, and one on designs for bracelets and ornaments.

Business and Commerce.—The entries consist of popular material such as "A Friend of Merchants," "Business with a small capital," etc.

Speaking generally it appears that Bengali technical literature is of the low-priced, very "popular" description, and even so it is very limited in amount. It is not, however, fair to judge amount from a selected list, since by more or less severe selection the totals may be made to differ very considerably.

Table 11 shows the total production under these headings during the period 1910-1923 (5 quarters omitted), and the annual production for $12\frac{3}{4}$ years). The chief effect of including all books is to swell the total of Heading 13 by a large number of Primary Drawing Books. Geography and Survey have been included: the books in these subjects are almost entirely junior textbooks.

Subject.	Serious.	Other.	Total.	Mean annual output for $12\frac{3}{4}$ years.
<i>Science.</i>				
1. Physics . .	3	..	3	0.2
2. Chemistry . .	4	..	4	0.3
3. Astronomy . .	11	2	13	1.0
4. Natural Science .	14	78	92	7.2
<i>Art.</i>				
1. Technology . .	6	3	9	0.7
2. Fabricative . .	12	4	16	1.3
3. Extractive . .	4	..	4	0.3
4. Metallurgy and Mining.	3	..	3	0.2
5. Agriculture . .	35	5	40	3.1
6. Sericulture . .	3	..	3	0.2
7. Animalculture .	10	..	10	0.8
8. Electric . .	2	..	2	0.2
9. Domestic . .	13	12	25	2.0

Subject.	Serious.	Other.	Total.	Mean annual output for 12½ years.
10. Engineering . .	3	..	3	0.2
11. Photography . .	3	..	3	0.2
12. Recreative . .	25	44	69	5.4
13. Painting . .	5	181	186	14.6
14. Decorative . .	13	..	13	1.0
15. Commerce . .	8	..	8	0.6
16. Geography . .	(Inclusive)	353	353	27.7
17. Survey . .	„	17	17	1.3
TOTAL .	177	699	876	68.5

TABLE 11.—Technical books of all kinds published in the Bengali language, 1910-1923 inclusive (5 quarters omitted).

Table 12 shows a comparison with English books published in England in 1919 :—

English Catalogue 1919.	Corresponding to headings in previous table.	Total English output in 1919.	Annual Bengali output for 12½ years, Junior texts excluded.	Annual Bengali output for 12½ years, Junior texts included.
Science . .	Sciences 1-4 .	434	1.7	8.8
Technology . .	Arts 1-4, 8, 10 and 11.	686	2.6	3.1
Agriculture . .	Arts 5, 6, 7 .	228	3.1	4.2
Domestic Arts ..	Arts 9 . .	47	1.0	2.0
Business . .	Arts 15 . .	139	0.4	0.6
Fine Art . .	Arts 13, 14 .	127	0.8	15.6
Recreation . .	Arts 12 . .	125	2.7	5.4
Geography and Survey.	Arts 16, 17 .	126	..	29.0
TOTAL .		1,912	12.3	68.7

TABLE 12.—Comparison of Output of Technical books in England in 1919 and the average annual output in Bengal (1910-1923).

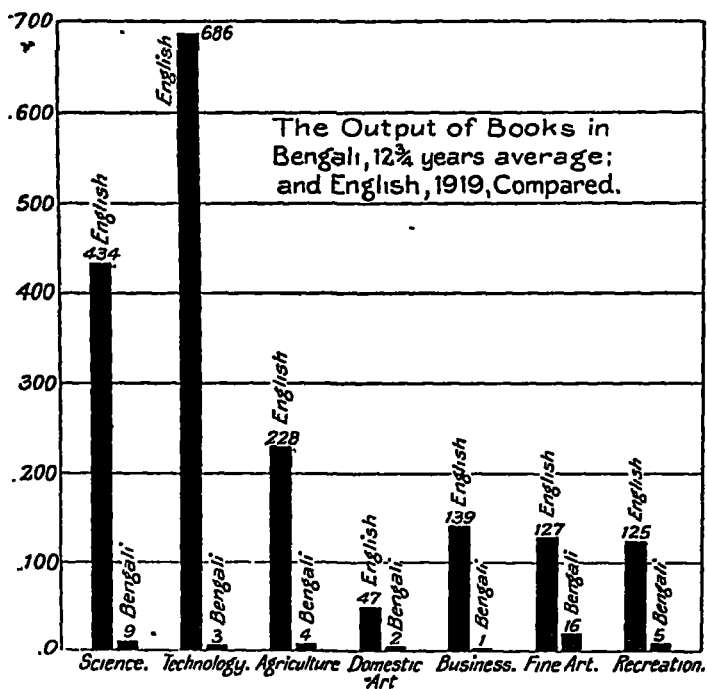


DIAGRAM 1.

It is interesting to enquire in what subjects there is a tendency to increase in the production of Bengali books. A comparison is made of the average output in each subject during 1910, 1911, 1912 and a similar figure for 1921, 1922, 1923. The headings are those of the Bengal Library Catalogue.

Increase in—	Increase in output of books per annum in 1921-23 as compared with 1910-12	Percentage of Increase over 1910-12.	Decrease in—	Decrease in output of books per annum in 1921-23 as compared with 1910-12	Percentage of decrease from 1910-12.
Art . . .	25.6	183%	Drama . .	1.7	3%
Biography . .	19.5	41	Medicine .	8.8	22
Fiction . .	73.3	50	Philosophy .	0.6	35
History and Geography.	60.8	61	Poetry .	37.0	34
Language . .	200.9	166	Religion . .	120.4	44
Law . . .	6.8	184	Natural Science	6.6	43
Miscellaneous .	112.3	71	Travel . .	12.8	90
Politics . .	19.7	2,814	..	..	..
Mathematics .	28.0	64	.	.	..

TABLE 13.—The Increase or Decrease of books published in the Bengali language, comparing the mean outputs of 1910, 1911, 1912 and of 1921, 1922, 1923.¹

A book for book comparison of Bengal with England and America is not very easy to make, since in Bengal we are including a large number of paper-covered books of small price which are probably not listed in the Catalogue of English Books and the American Cumulative Index: moreover the American Cumulative Index includes a number of books of English origin; and the two catalogues together exclude books published in the English language in Australia, South Africa, India and other parts of the world. However the figures are presented for what they are worth. They probably rather underestimate the disproportion between the output of Bengali and that of English books, but they emphasise the fact that the inferiority of the Bengali output is rather in Informative literature than General literature (rather as regards the Symbolic than the Evocation function of language).

¹ One quarter's catalogue in 1923 is missing. 2.75 was therefore used as divisor.

Bengal compared with England and America in respect of output of books.

Average annual (12 $\frac{3}{4}$ years) output of Technical books written in Bengali . . .	68.5
Output of Technical books written in Bengali in 1919 (one quarter averaged: 69 actual in three quarters) . . .	92.0
Output of Technical books on these subjects in England in 1919 . . .	1,912
English Technical books per one Bengali book (1919 figure) . . .	20.8
English Technical books per one Bengali book (average figure) . . .	27.9

All Books.

Total Bengali output 1919 (one quarter averaged) . . .	1,548 (a)
Total Bengali output (average of 1918 and 1920) . . .	1,224 (b)
Total output in England in 1919 . . .	8,622
English books per one Bengali book (a) .	5.6
Do. Do. (b) .	7.0
Total American output of books in 1919 (mean of two independent 1 per cent. page counts 17,102 17,020: $\frac{2}{3}$ of this, as the Index covers 1 $\frac{1}{2}$ years) . . .	11,374 .
American books per one Bengali book (a) .	7.5
Do. Do. (b) .	9.3

TABLE 14.—Statement.

	%
Increase of Bengali books, 1910—1923 . .	42.7
Increase of English books written in Bengal .	7.1
Bengali books per one English Book written in Bengal 1910 . . .	4.2
Bengali books per one English Book written in Bengal, 1923 . . .	6.0

Thus there is a slight tendency for the Bengali to write more in Bengali than in English than in the past.

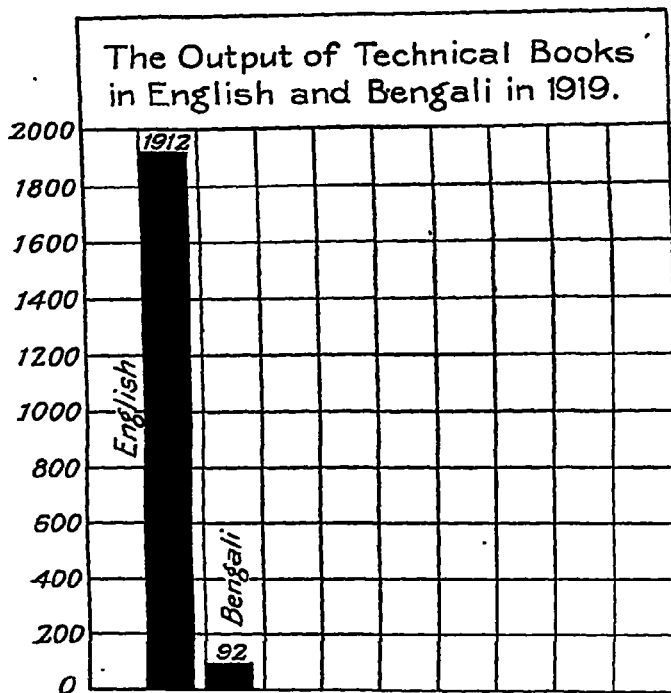


DIAGRAM 2.

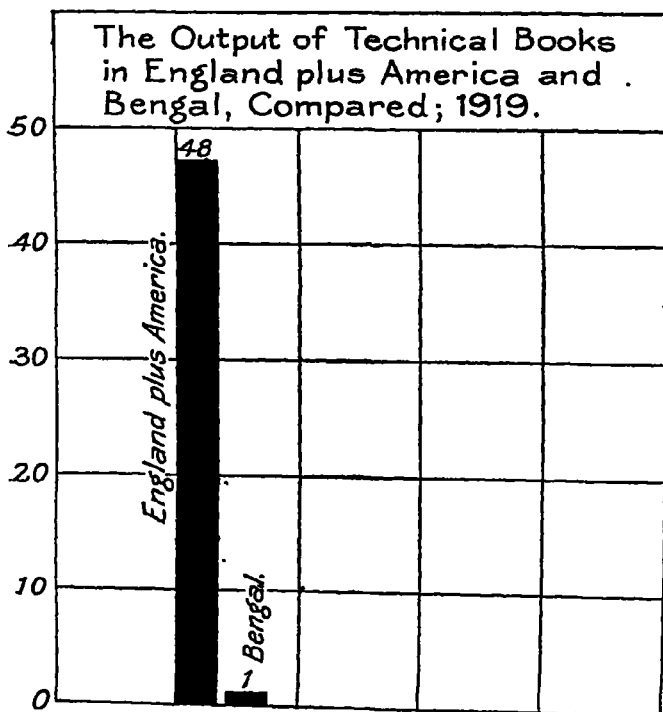


DIAGRAM 3.

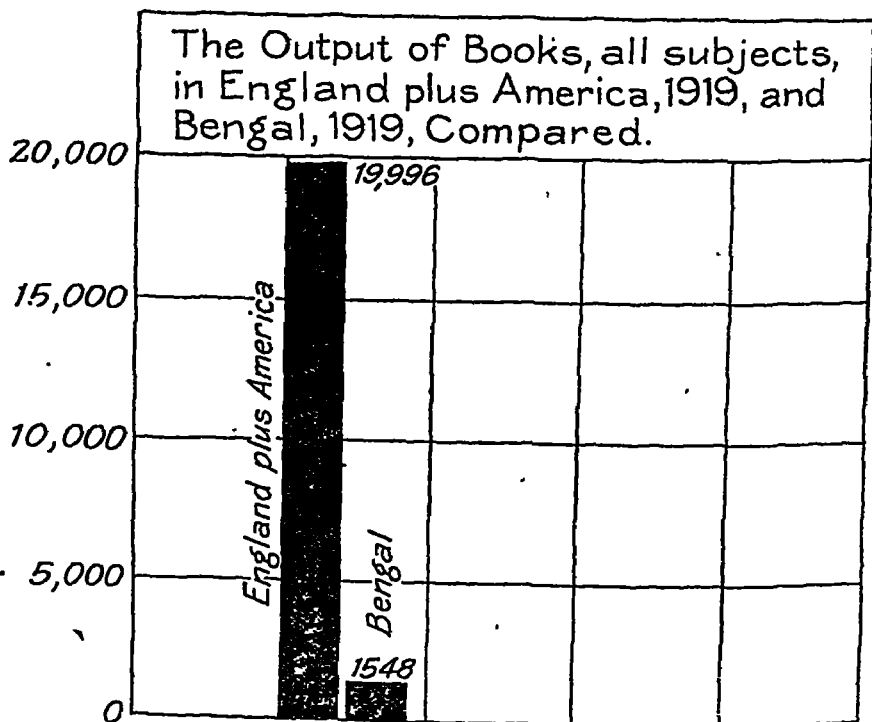


DIAGRAM 4.

Technical journals in Bengali are almost *nil*,—two journals which are nominally medical but actually advertisements of medicines, two or three agricultural journals, and a few “Teachers’ Journals” are all the list.

The situation set forth above indicates that a Bengali confined to his own language will not lack a literary culture, but he will inevitably be very deficient in matters of technical and scientific knowledge. The skilled workman has practically no books to turn to in Bengali; the boy or adult interested in the world of nature finds in his mother-tongue nothing but a few popular “chap-books” to satisfy his curiosity.

The outlook is not hopeful. Human activity and human knowledge are becoming every year more complex and more specialised, and the average man desires and is required more and more to keep in touch with new developments in his occupation or profession. One hundred years ago the promoters of education in Bengal might reasonably have hoped by vigorous translation within a conceivable period to bring Bengal level with the knowledge of the rest of the world. The situation is now immensely changed. The output of books under the headings of the list of Technical and Informative subjects given above is in America probably about 2,500¹ volumes per annum; this does not include journals. If we add the English production the total (4,434) is forty-eight times the Bengali output on those subjects in 1919.

It is obvious that Bengal can never catch up.

Nor, if it caught up, could it afford to remain level. An English volume on a detailed point of a technical subject has the whole of England, America, Canada, Australia, South Africa for its market. It is therefore possible to publish books in English with a profit which in almost any other language (except, in some subjects, German) would mean a loss,—and technical books are costly ventures. The education and the wealth of Bengal will doubtless increase, but the variety and the complexity of the thoughts of mankind are also increasing. A day will no doubt come when all Bengal will be literate, and its humblest people will be able in their mother-tongue to obtain some general inkling of the world; but it is impossible to foresee a period when the Bengali specialist will be able to obtain technical information in his mother-tongue. In the modern world all men are specialists.

(What then of the other smaller languages of the world? We suggest that more and more as years go by will an inde-

¹ By taking 1912/8622 of 11374 = 2522.

pendent technical literature become impossible in their case also,¹ that the Symbolic language of the world tends to unity, as its Executive language tends to diversity).

Thus the fundamental need of the Bengali for English has changed little since the days of Macaulay:—

“How then stands the case? We have to educate a people who cannot at present be educated by means of their mother-tongue.” They can be educated in literature, in all that concerns the “dear and intimate things” of which the mother-tongue is the natural expression. They cannot be educated in respect of the common information of mankind.

Their need is not English to speak, not English to hear, nor to write, but English to read, in order that they may enter that vast repertory of knowledge which is contained in the richest of all languages.

* * * * *

We have considered the larger aspect of the case: we have now to review some special considerations.

EDUCATIONAL WASTAGE IN BENGAL.

The original policy of bilingual education in India contemplated a dual system of schools—

- (a) Anglo-vernacular schools for better-class pupils:
- (b) Vernacular schools for the common people.

This scheme did not work in practice. From the first the public refused to favour the vernacular system, whereas boys crowded into the Anglo-vernacular schools; and in these

¹ “When the college was first started it was decided by a committee to give instruction in all scientific subjects, including Medicine, through the medium of Arabic. A lot of expense and trouble was incurred in having books written on the various subjects and in arranging to keep them up to date. After a short while, however, it was found that science was making such rapid advances that it was quite impossible to keep track of all the new developments and theories if Arabic were adhered to as the medium of instruction, and the committee, recognising that if they were to do their duty by their graduates they must give them courses which embraced all the latest discoveries and theories, reluctantly decided to adopt the system of teaching all science, including Medicine, in English.” American College at Beirut. Report in “The Near East,” Oct. 21, 1917. (See also Wells, H. G., *Anticipations*, 1902, page 227.)

latter the study of English has tended to eclipse study of the vernacular. Thus instead of there growing up a small and select Anglo-vernacular educational system, and a large Vernacular system, there grew up a large and unselect Anglo-vernacular system, and a small and penurious Vernacular system, whose chief function is to act as nursery governess for its more prosperous companion. Hence the Anglo-vernacular schools have come to contain not the wealthier nor the brighter children only but practically a sampling of the whole population. The result has been to introduce into the system of English education two very potent causes of "educational wastage" (that is elimination of pupils from schools before the completion of the course): the first is poverty, and the second mediocrity. Only the boy who is above average (or at any rate average) can derive full benefit from a secondary education; the others tend to "fall by the wayside;" still more is this the case where the secondary education is bilingual.

The most obvious and outstanding feature of any statistics of education in Bengal is this wastage. Thorndike¹ discusses a similar point in regard to American schools, but his figures are small compared with those of Bengal. The present writer² drew attention in 1919 to the phenomenon in the Bengali primary school:—

After—years.	Percentage of boys reading in previous year, lost.	Viz., of—year.
	%	
1 year	18	1st year.
2 years	33	2nd year.
3 years	23	3rd year.
4 years	40	4th year.

TABLE 15.—Elimination in the Primary School system of Bengal.

¹ Thorndike, E. L., and Strayer, G. D., *Educational Administration*, 1913, Part I, Sec. 2, Sec. 6.

² West, M., *Survey of Primary Education in Bengal*, 1919, page 3.

There are, however, reasons which explain this phenomenon, for parents send young children to the primary school in many cases not from any educational enthusiasm, but in order to get them out of the way; and in a few years, when the children are old enough to be some use or of some wage-earning value, they keep them at home: other children go to the primary school for a year or so only while they are waiting to go to the high school.

In the secondary system, however, the condition of affairs is hardly better, and there are not these consolations or excuses:—

Class.	Number of boys in the class.	Loss, compared with previous year.	Percentage of class lost.
10 (highest)	19,705	1,480	7
9	21,275	6,228	29
8	27,503	4,629	14
7	32,132	15,380	32 (2)
6	47,512	7,314	13
	51,856	31,038	36 (1)
4	85,894	40,163	32
	126,057	..	..

TABLE 16.—Elimination in the School system of Bengal.

The causes of wastage in the secondary system are not the same as those in the primary system. We have here a system of secondary education to which (owing to the abolition of the public examination at the end of the Primary and Middle stages) all have access. It is very cheap, and there are numerous scholarships, free places and concession rates. Hence a very wide and unselected "sampling" of the population attends. Owing to the rapid growth and cheapness of the system, neither public funds nor fee payments have sufficed to make it efficient. As a result, where unusually

¹ The primary grade (in the top class of which English is taught) ends at Class 4.

² The middle grade (which to a large extent is embodied in the High School system) ends at Class 6.

(The table is calculated from Progress of Education, Bengal, 1912-13 to 1916-17, General Table X. The figures are those of 1916-17).

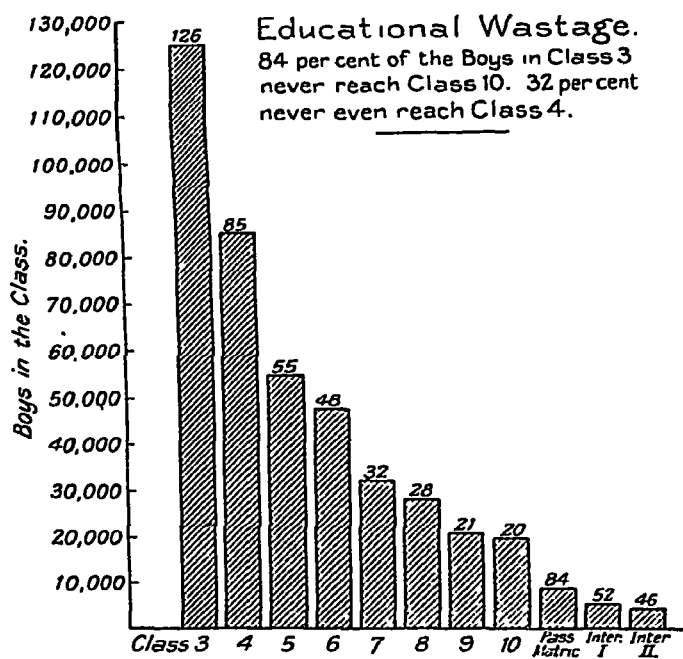


DIAGRAM 5.

small classes are actually required for such unselected material, we find unusually large classes; where exceptionally able teaching is necessary for such a difficult task, we find an insufficient number of teachers, and those ill-paid and inefficient.

The secondary curriculum, including as it does a second language, is really too difficult for about 30 per cent. to 40 per cent. of the pupils,—for those pupils who would not in a normal system be studying in that grade or type of school; and the schools are peculiarly ill-equipped for dealing with these below-average boys. If the theoretical standard of the curriculum were really enforced, the elimination would be much higher, but the University of Calcutta has depended for the finances of its post-graduate work on Matriculation fees, and for financial reasons among others has kept its standard low. This low standard in the end-examination means lax promotions, and lax promotions mean ill-graded classes, and ill-graded classes mean an impossible task for the teacher and consequently worse teaching; and worse teaching lowers the standard in the end-examination and thus—in a vicious circle. But even with this laxity of promotion and low examination standard the amount of wastage is extremely large. This is due not merely to cases of subnormal boys who find the course too difficult and leave early, but also to the departure of boys who probably never intended to complete the course. For the High Schools in Bengal offer practically the only education available above the infant stage, and hence have to prepare for all occupations, including many which do not require nor permit of a full ten years' schooling.

Now a secondary curriculum is ordinarily a closely knit unit and is based on the assumption that all will complete it. The early stages are usually mainly preparatory in their function, and the benefit of the course does not become apparent until a very late stage. The secondary curriculum of Bengal does not differ from the ordinary type, but the amount of elimination in the schools of Bengal makes this type of curriculum obviously unsuitable. This elimination is due to fundamental causes, causes inherent in the educational problem of the country. There is no reasonable prospect of a fresh start. Even if a fresh start could be made, the same problem would remain; there would still be boys of very different destinies and greatly differing periods of schooling needing instruction together at the start in a second language.

THE "SURRENDER VALUE" OF SUBJECTS.

By the Surrender Value of a subject we mean the proportionate amount of benefit which will be derived by any pupil from an incompleeted course of instruction in that subject. The Total Value of the course is the end-result aimed at by those who compiled it; if a child studies for the first half of the course only and derives from his study half or nearly half of the total value, we may say that the surrender value of the subject is 100 per cent.; whereas if the first half is utterly useless without the rest, we may call its surrender value zero.

This concept is perhaps a peculiar one,¹ since in countries where Primary Education is compulsory and Secondary Education is intended only for those who can afford it and are fit for it, the child who does not complete a course does not deserve special consideration in the curriculum. We have indicated that in Bengal the situation is otherwise; in Bengal to assume that all will complete the course would be to legislate for the exception, since only 15 per cent. of Class III and only 42 per cent. of Class VI reach Class X.

It is obvious that the surrender value of various subjects will tend to differ very greatly: for example arithmetic has a very high, and music a very low surrender value at the end of the first year.

It is also obvious that the surrender value of a subject will vary considerably according to the nature of the course. Thus we can imagine a course in algebra with a zero surrender value at the end of the first term (if the matter taught were purely preparatory), or with a cent per cent. surrender value if the use of algebraic methods in the solution of arithmetical problems were emphasised.

In designing a course of instruction in English for the Bengali it is necessary to plan it in such a way that the surrender value shall at every point be as high as possible: however, early a boy may abandon school, he must carry away something of permanent value and utility from his study of English.

In this connexion it is to be noted that the need of the language for the boy who leaves school early is different from

¹ The idea is, however, not uncommonly met with in discussions of the teaching of the Classics: Jones, F., in "Educational Movements and Methods,"—Edited, Adams, J., 1924, pages 89-100.

that of the boy who completes the school curriculum, just in so far as the future occupations of the two boys are likely to be different in after life. The boy who leaves the High School in Class VII after five years' study of English will probably become a skilled labourer of some kind, whereas the boy who goes on to Class X and passes the Matriculation, in most cases ends in some clerical or professional occupation.

How then can the course of English teaching in Bengal be so arranged as to give each boy what he needs, and to yield at each stage the highest possible surrender value?

ANALYSIS OF FOREIGN LANGUAGE BONDS.

The learning of a foreign language involves the formation of four types of mental bond, namely:—

Bond.	As found in —
1. Idea to Speech . . .	Speaking the language.
2. Speech to Idea . . .	Understanding Speech.
3. Idea to Writing . . .	Writing the language.
4. Writing to Idea . . .	Reading the language.

The precise needs to satisfy which a language is learned differ very widely,¹ and the particular bond, or aspect of the language to be studied, will vary according to the precise nature of the purpose in studying the language. "Many desire," says Professor Palmer, "a knowledge of the written language only. They wish to be able to read and write, not to understand the spoken language or to speak. Some may limit their attainment to a capacity for reading the language; they wish to have access to technical or other books. Such people, having entirely different aims, require entirely different methods. They must be furnished with everything that will facilitate their work, and we may omit from their programme everything that does not lead directly towards the limited and special end they have in view."²

There are, as Palmer suggests, those extreme cases in which one aspect alone of the language is required, e.g., the

¹ Palmer, H., *Scientific Study and Teaching of Languages*, 1917, page 57, mentions five possible aims, Salesman, Travel, Science, Philology, Examination. The Bulletin of the Institute for Research in English teaching, Tokyo, New Series No. 6, page 4, gives a very similar list. Flexner, A., "A Modern School," 1916, page 13, adds Study, Enjoyment. Obviously other types of aim might be added, e.g., Social Display, Religion.

² Palmer, H., *Principles of Language Study*, 1921, pages 61, 64.

scientist's German reading, or the tourist's French speech; but in most cases the difference is a matter of emphasis, or of priority. Thus the tourist requires ability to speak in the first instance, but in a lesser degree, the ability to read also. So also the scientist requires primarily the ability to read, and secondarily the ability to write. This "primarily" and "secondarily" will, in practice, mean "first" and "second," for the prospective tourist will first learn to speak, and will go on to writing if his time, energy and enthusiasm are sufficient.

Now the Bengali boy primarily needs the ability to read English, secondarily the power to write it, and last, the power to speak it and understand it when spoken. For any matter of ordinary oral communication the vernacular suffices; the average Bengali boy—or man—is living in the midst of his fellow-countrymen. Atkins¹ and Hutton put the case clearly in reference to the English schoolboy:—"The total number of our students who will probably ever have direct intercourse with foreigners will probably always remain comparatively small, and on this ground alone a national position can not be claimed for the study of languages." We may say the same of the average Bengali schoolboy in reference to English. English-speaking persons are 0·1² per cent. (or on another basis of calculation 0·01 per cent.) of the population of Bengal and the 'average' boy is most unlikely to go outside the province; a very large proportion of the English-speaking foreigners are required in terms of their agreements to learn to speak the language of the province,—and do so.

Ability to write English is certainly a more valuable accomplishment, for many who do not travel outside the province may have occasion to correspond with persons outside the province: the small shopkeeper and contractor write to Bombay or Karachi for supplies; but the motor-mechanic, the electric fitter, the average skilled workman has no such need. He can live his life very efficiently and very com-

¹ Atkins, H. G., and Hutton, H. L., *Teaching of Modern Foreign Languages*, 1920, page 1.

² Census of India, 1921, Vol. V, Part II, pages 98, 118. English-speaking persons: Bengali-speaking persons, in Bengal are 1:943. But of the 46,403 English-speaking persons 31,769 live in the Presidency Division, that is in and around Calcutta, so that excluding the English-speaking population of the Presidency Division and the Bengali-speaking population of the Presidency Division, the proportion becomes 1: 2407 (or 0·01 per cent.) as regards the remaining four-fifths of the Province.

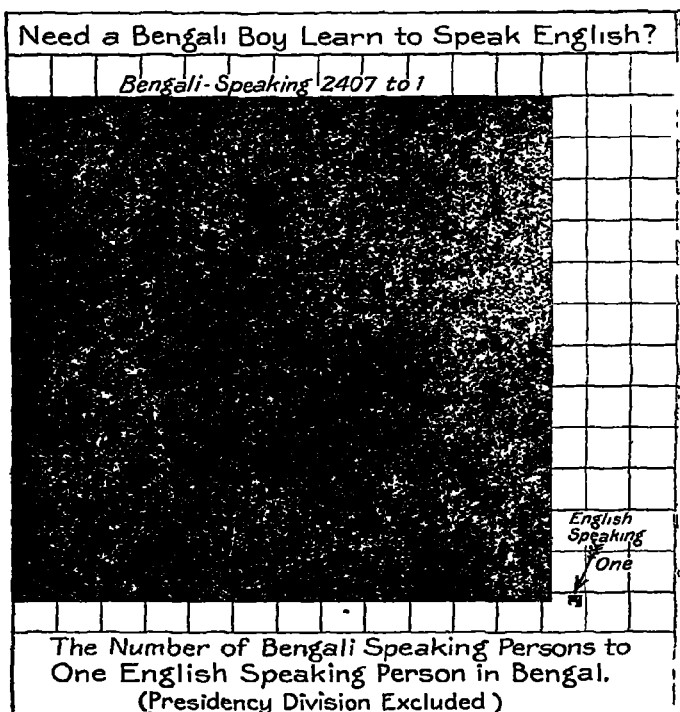


DIAGRAM 6.

fortably without ever feeling need or occasion to express his ideas in any language but his own, no more than is felt by his counterpart in England.

The position in regard to the ability to read English is very different, for the language of the Great Society, which yearly more and more encircles the Bengali, is English. The Bengali can be cultured in his mother-tongue, but he cannot be informed: the information is in English.

Considering then the needs of the boy who leaves school earliest, *viz.*, the Primary School boy (in some cases) and the Middle school boy (Class III—Class VI), the language ability most needed by them is the ability to *read* English. The boy who stays longer—up to Class IX or X—may in his after-life have a wider sphere of action, and may need to correspond with persons outside the province; he may need the power to *write*, at least in some very small degree. The boy who continues his education definitely up to a professional stage will be likely to have direct intercourse with persons who cannot speak Bengali, or to discuss subjects which cannot be conveniently discussed in Bengali, and may therefore need to *speak* and understand spoken English.

THE COMPARATIVE DIFFICULTY OF THE LANGUAGE-BONDS

The boy who is earliest eliminated from school is in general the boy of least scholastic aptitude. If we are to provide a course of English study which will reach a point of usable efficiency before the boy leaves school, we must prefer the easiest aspect in the earliest stage. Now the Speech Bond involves (1) Skill in Pronunciation, (2) Accidence and Syntax, (3) Reproduction-memory of the vocabulary. The Writing Bond involves (1) The Alphabet (Recognition and Writing), (2) Spelling, (3) Accidence and Syntax, (4) Reproduction-memory of the vocabulary. The Understanding-of-speech Bond involves sufficient pronunciation and grammar to enable the student to recognise what is said, and a Recognition-memory of heard vocabulary. The Reading Bond involves only a "Recognition" ability in grammar,¹ a Recognition-memory of the alphabet and spelling, and a Recognition-memory of vocabulary.

¹ Jespersen tested boys who had just translated a sentence as to their ability to reproduce the original. "How to teach a foreign language," 1917, page 43. O'Shea confirms Jespersen's finding that it is possible to understand a sentence with very little awareness of its grammatical properties. O'Shea, M. V., "Linguistic Development and Education," 1907, page 309.

The ' Understanding of Speech ' and ' Reading ' Bonds compose the Receptive aspect of language. The Speech and Writing Bonds compose the Expressive or Active.

It is clear that the Receptive aspect is by far the easier: " The understanding of what is said always precedes the power of saying the same thing oneself, and often precedes it for an extraordinarily long time."¹ It is very much easier passively to recognise a word than actively to use it; " The passive or receptive knowledge of a language always goes far beyond the active or productive "² for " the latter involves writing, spelling, pronunciation, accident and syntax,"—and, we may add, Reproductive memory instead of mere Recognition.

Of the two Receptive aspects, Hearing, and Reading, it will be clear that the latter is the easier, because there is no difficulty of understanding varieties of pronunciation; the reader can read at his own speed; and he can look back.

If then we desire to give the boy who will not remain long at school any one effective power in the language before he leaves, we are more likely to achieve this end in Reading than in Speech or Writing.

SUBSEQUENT SELF-IMPROVEMENT.

If the actual amount of knowledge gained at school were the only justification for schooling, the case for education would be a very poor one. The school is the beginning of learning, and learning is a process which goes on through life. One of the chief criteria of the suitability of a subject for school study, and of the success of any method of teaching it is " Will the child go on studying the subject after he leaves school?" Or " Can he go on studying it?" Applying this criterion to the present problem, namely of the boy eliminated early from school, it is obvious that the aspect of language study which is most amenable to subsequent individual self-improvement in Reading. The boy who is eliminated early does not as a rule come from a cultured home; there is no one who will assist him to exercise himself in English conversation, nor any one who can correct for him his written compositions. But, given suitable reading material and a dictionary, he can spend, and is not unlikely to spend pleasurable and profitable hours.

¹ Jespersen, O., *Language*, 1922, page 113.

² *Ibid*, page 125.

THE REASON FOR LEARNING A FOREIGN LANGUAGE.

We have analysed in some detail the nature of the Bengali's need of English; and we have shown that essentially and primarily it is a need of Reading ability in English. On this point we have ample support from public opinion. The Calcutta University Commission comments on the Bengali student's lack of books,¹ and shows that this is not due to poverty, for they do not use the books they have;² the Commissioners emphasise the need of teaching the Intermediate College boy to read English easily.³ On this point the witnesses also appear to be unanimous, namely on the need of English *reading* ability.⁴

Even were the case of the Bengali exceptional such evidence would be sufficient, but the case of the Bengali is not

¹ Calcutta University Commission Report, V, page 44.

² *Ibid*, page 45.

³ *Ibid*, IV, page 102.

⁴ Calcutta University Commission Report, Vol. X. The point is most specifically emphasised by the following:—

Khan Bahadur M. Tassadaq Ahmed.

Khan Bahadur M. Ahsanulla.

H. S. Allen.

Umacharan Bannerjee.

J. R. Barrow.

Staff of the Bethune College.

Sir R. G. Bhondarkar.

Haridas Bhattacharjee.

Krishna Chandra Bhattacharjee.

Rev. A. E. Brown.

Rai M. M. Chakravarti.

Hon'ble A. C. Chatterjee.

S. G. Dunn.

H. B. Dunnieliff.

Bamapada Dutta.

Haridas Goswami.

Khan Sahib Kazi Imadadul Huq.

Rev. W. Holland.

Sir Mark Hunter.

Hon'ble M. Fazli Husain.

C. E. W. Jones.

T. C. Jones.

A. H. Mackenzie.

Hon'ble R. Paranjpye.

C. W. Peake.

Hon'ble B. K. Roy Chaudhuri.

S. K. Rudra.

Meghnad Saha.

Bimal Ananda Sen.

Bepin Behari Sen.

Surendra Nath Sen.

Dr. N. C. Sen Gupta.

Hon'ble H. Sharp.

Ananda Krishna Sinha.

F. W. Sudmersen.

exceptional. We may enquire "Why does the child of any nation learn a foreign language at school?" And the answer is scarcely different: nor is the need different save in this—that the Bengali's need is greater.

"A man educated in the modern sense will be trained to know, to care about, and to understand the world he lives in, both the physical world and the social world."¹ This statement is used as a criterion of what shall enter the curriculum. A foreign language then is a part of the curriculum not because it is a "means of conveying our thoughts to others,"² for the amount of power of expression which can be created in a school course is almost valueless, and even if full power of expression were attainable, in what proportion of cases would it prove of actual utility in the after-lives of the children? "Comparatively few of them ever cross the Channel."³ If ability to speak foreign languages is education, then waiters are the most highly educated class.

Sanderson of Oundle epitomised the true purpose of foreign language teaching in one word—*Insight*:—"First and foremost in the present stage of world development he placed the power of understanding and spreading the thoughts contained in the books in which the greatest foreign servants of mankind have recorded their deeds and their visions. The essential value of modern languages lies in the insight they give into the life and thought of foreign nations."⁴ The work of the school in this subject "is not complete unless it leaves with the pupils a lively and sympathetic interest in the history, life, and institutions of the foreign though kindred race."⁵

Brul states the case from the practical as well as the ideal standpoint:—"Not one of our students will have to translate English works into foreign languages (we are of course not concerned with the training of interpreters and professional translators). Some may be called upon to speak fluently in a foreign tongue. Some may wish to translate from

¹ Flexner, Abraham, "A Modern School," 1916, page 8, quoted in Norman, J. W., "A Comparison of Tendencies in Secondary Education in England and United States of America," 1922, page 117.

² Kitson, E. C., *Language Teaching*, 1918, page 4. This misleading definition and the deductions derived from it are at the base of most of what is bad and useless in foreign language teaching in the schools.

³ Thomas, Calvin, in "Methods of teaching Modern Languages," 1896, page 20. So also Joynes, E. S., *Ibid*, page 32.

⁴ Anon, "Sanderson of Oundle," 1923, pages 105 and 325.

⁵ Modern Languages (Board of Education, No. 797), page 25.

⁶ Brul, K., *The Teaching of Modern Foreign Languages*, 1913, page 13.

foreign idiom into English. Others may wish to correspond in the foreign tongue, but *All* want to read foreign books, periodicals and newspapers and to enjoy the treasures of foreign literature. All will be anxious to have some knowledge and form a just appreciation of the general character, thoughts, manners of their neighbours and fellow workers in the great field of civilisation. For this most important aim the school teaching should fully equip them. Hence it follows that *reading*, not translating, should be placed in the foreground."—The case could hardly be expressed more clearly.

Yet, in spite of all this many schools in England and most schools in Bengal continue to teach as if Speech and Writing were the first and second considerations, and Reading the third; and the examinations are tests of ability to write the language, of ability to worry out the meaning of short difficult passages, sometimes of ability to speak the language, but never of ability to read the language in a manner and at a speed compatible with utility and enjoyment.

If ability to read is the supreme and essential aim, the ability required by all, however early they leave school, the ability which they can most easily attain, most surely carry away, most readily improve in their solitude, we should teach reading first, and the rest—speech and writing—to those who wait for them, are more able to master them, and more likely to need them.

THE OBJECTION, (1) THAT READING ABILITY AND ACTIVE SPEECH ABILITY ARE INSEPARABLE.

One obvious objection to this proposal is the very fundamental one that for purposes of argument it is possible to separate the Language Bonds,—Speech, Hearing, Writing, Reading—but that psychologically they are inseparable.¹

This objection will stand neither the test of fact nor of theory. Separation of the above abilities may not be the normal condition, but it is certainly a possible and very common condition:—"Many persons," writes Professor Palmer, "are able to use the language in one state and not in another. One who has read extensively and written little may have a passive command of the written language little inferior to that of his mother-tongue. One who has listened much,

¹ For an experimental investigation of the point, see the Appendix to this Chapter.

who has frequented lecture halls and theatres, will have so sharpened his auditive faculties that nothing of importance escapes his comprehension. But neither of these may be able to express his thoughts in the foreign tongue with any degree of accuracy."

Similarly in a recent report of the Board of Education we read, "Of any language it is possible to have a speaking knowledge, a reading knowledge and a writing knowledge. It is of course possible to speak a language without having learned to read it or to write it. It is no less possible to read or even to write a language without being able to speak it. Each of these elements in combination assists and strengthens each of the others. The speaking powers in particular can be fortified and increased by reading; but each has for different purposes its own independent value."²

Bertrand Russell suggests that writing "which we now regard as a way of representing speech was originally an independent language" as it is today in China. "It would seem that writing nowhere began as an attempt to represent speech; it began as a direct pictorial representation of what was to be expressed,"³ so that a congenitally dumb man might be able to read. Hinshelwood is definitely of opinion that the two functions, speech and reading, are separable:—"Some who experience great difficulty in learning to read a foreign language may have little or none in learning to speak it, and *vice versa*, as different cerebral centres are involved in the two processes."⁴ O'Shea⁵ holds the same view.

There is in most reading some inner articulation of the words read, or of a part of them: but it is probably an exaggeration to say that "All normal people inner-articulate all that they read" and that "We are incapable of understanding what we read unless a process of inner-articulating is going on at the same time."⁶ The Behaviourist maintains that all thought, including that guided thought which is the product of reading, is an action of language mechanisms.⁷ It is possible that the articulation of a word carries with it

¹ Palmer, H. E., *Scientific Study and Teaching of Languages*, 1917, page 65.

² "Modern Studies" (Board of Education, 1918), page 23.

³ Russell, B., *Analysis of Mind*, 1921, page 190.

⁴ Hinshelwood, J., *Congenital Word-blindness*, 1917, page 78.

⁵ O'Shea, M. V., *Linguistic Development and Education*, 1907, page 306.

⁶ Palmer, H. E., *Principles of Language Study*, 1921, page 93.

⁷ Watson, J. B., "Psychology from the standpoint of a Behaviourist," 1919, page 316. Russell, B., *Analysis of Mind*, 1921, page 199.

a greater vividness of meaning than the hearing or seeing of it.¹ On the other hand some words are read by a purely visual process and are represented by a purely visual symbol in the process of thought, and the ideas remain in the mind after the actual words which evoked them have vanished from consciousness.² This however may be the exception and we may admit that normally reading involves some inner speech, and add further that it is in fact impossible to teach reading in the very earliest stages otherwise than orally. One cannot use silent reading when the child is mastering the alphabet.

Where we may be permitted to differ from the textbooks of educational method is in the deductions to be drawn from the above facts of the psychologist: to differ from the deduction, for example, that "Learning to speak a language is always by far the shortest road to learning to read and write it."³ Yet the same author in his larger volume admits the possibility of a course aiming at 'reading knowledge' only, and proposes for such cases a course in which "no phonetic instruction whatever will be given, and all the exercise will be based on the passive aspect of the language."⁴ We may note that in the Manchester College of Technology, Mr. A. Kirk, so far from adopting the principle of speech as an essentially necessary first step, holds that a course in reading is a valid beginning for those who afterwards desire to learn to speak: "Our method is of course for students who wish to learn to read a language. I hold however that our method is equally valid in the beginning for those who wish to write and speak in the language; a student has to travel merely one step further for writing and another for speaking."⁵ Since reading is the simplest and easiest of the three language bonds, and since "passive work should always precede active work,"⁶ and the creation of a "receptive aura," "a power of sub-conscious comprehension,"⁷ is a valuable preliminary

¹ Judd, C., and Buswell, G., *Silent Reading*, Sup. Ed. Mon. 23, 1922, page 150.

² Spearman, C., *Nature of Intelligence*, 1923, page 205.

³ Palmer, H. E., "Oral method of teaching languages," 1922, page 15, quoting Kittson, E. C., "Theory and Practice of Language Teaching," page 45.

⁴ Palmer, H. E., *Scientific Study and Teaching of Languages*, 1917, page 226.

⁵ From a valuable note communicated to the author by Mr. A. Kirk, Lecturer in Modern Languages in the Manchester College of Technology on the methods of modern language teaching used in that College.

⁶ Palmer, H. E., *Scientific Study and Teaching of Languages*, 1917, page 66.

⁷ Palmer, *ibid*, page 131.

to practice in the active use of the language, we might be inclined to reverse the dogma and maintain that in the initial stages "Learning to read a language is by far the shortest road to learning to speak and write it."¹

It is the shortest road, and it is also certainly the safest. The great practical administrative difficulty of the "Direct Method" of teaching a foreign language is that it places so heavy a responsibility on the teacher of the lowest class who is himself usually one of the weakest units in the school teaching staff. The very early commencement of the active use of the language makes it possible for the teacher in the lowest class permanently to pollute the very fountain-head of the child's knowledge by incorrect forms of speech. The lowest class is the largest class and the least classified: it is the most difficult class to teach. In Bengal this class is almost invariably supplied with a weak teacher: this is inevitable since the graduate teachers barely suffice for the work of the higher classes which cannot be done by any less qualified persons. Hence by the end of Class IV (the second year of English study) any hope of purity of diction in the child has been for ever destroyed for most of the pupils. The advantage of commencing the study of a foreign language from the passive aspect of reading is that the child forms in his mind an idea of the structure and a "feeling" of the language before ever he is permitted to indulge in free composition, so that by the time he is permitted free self-expression in the language he has been inoculated against error. Moreover he does not reach any great measure of active use of the language until, in Class V or VI, he is under the charge of one of the more competent and responsible teachers.

THE OBJECTION, (2) THAT TRAINING IN READING MUST BE PRECEDED BY A COURSE OF PRONUNCIATION.

A second objection commonly made to the commencement of the teaching of a foreign language by an attempt to create reading ability is that since there must, at any rate in the initial stages of teaching reading, be speech and pronunciation, unless a thorough course in the true sounds of the language be given, the child may gather grotesque ideas as to the second-equivalents of the printed words such as would greatly interfere with—or even preclude—any literary enjoyment. As Ribot says, printed words in poetry "no longer

¹ See West, M., *Learning to Read a Foreign Language*, 1926, pages 5—6, for a development of this point.

act as signs but as sounds; they are musical notations in the service of an emotional psychology."¹ Hence it is maintained that we cannot read prose correctly and much less verse if we are "substituting a false sound picture for that in which the author conceived and fashioned his work."²

And yet it may be noted that a modern recitation of "The quality of mercy is not strained" would be unintelligible to the author of that passage,³ yet it is not generally considered necessary to teach the Elizabethan pronunciation of English to all those who wish to read Shakespeare's plays: even if it added anything to the music of the verse, it would certainly detract much more from its meaning and emotional value.—Here really is the essential point. The words of the mother-tongue carry, as Judd and Buswell have pointed out,⁴ the greater part of their emotional values and feeling tone in their articulation and their sound: the bond is auditory and kinaesthetic. It therefore seems inconceivable that a foreigner grossly mispronouncing the words should derive those emotional values which, for us natives, are essentially bound up with the correct pronunciation of the words. We say that he is "murdering the passage."—And yet it is conceivable that an American may find an American accent indispensable and a pure Southern English pronunciation a positive hindrance to his appreciation of Shakespeare.

The Calcutta University Commissioner's Report urges that not only should the pronunciation of English be taught, but the correct cadence also.⁵ On the other hand Mr. Barrow (Principal of Presidency College) and Dr. Seal of the Calcutta University consider that the importance of pronunciation alone (even apart from cadence) can be considerably over-emphasised,⁶ and Atkins and Hutton also consider such over-emphasis of purity of accent "a real danger to the best interests,"⁷ of foreign language teaching. If an English boy is to be taught to speak French exactly like a Frenchman, and a Bengali boy is to be taught to speak English exactly

¹ Ribot, T., *La Psychologie des Sentiments*, 1908, page 187.

² Palmer, H. E., *Oral Method of Teaching Languages*, 1922, page 5. (He is quoting Atkins and Hutton, *Teaching of Modern Foreign Languages*, 1920, page 8.)

³ Prof. Sweet of Oxford used to recite this passage in its Elizabethan pronunciation, and it was almost impossible to follow it.

⁴ Silent Reading, Sup. Ed. Mon. 23, 1922, page 150.

⁵ Calcutta University Commission Report. V, page 41.

⁶ Calcutta University Commission Report, II, page 201.

⁷ Atkins, H. G., and Hutton, H. L., *Teaching of Modern Foreign Languages*, 1920, page 9.

like an Englishman, how much more should the Scotchman and Welshman and an American be taught to speak English "properly."¹ Similarly when the Calcutta University Commission complains, "We have in Calcutta heard teaching of an English class . . . in which we were unable to understand a single word which passed between the teacher and the taught"² we may set beside it the experience of an English woman in the Philippines:—"As to the language they (American school-teachers) speak and profess, it is so unlike English that literally I find it difficult to catch their meaning when one of them speaks to me direct, and quite impossible when they talk to each other."³

It must not, however, be concluded from this that the Bengali boy in the early stages of learning English reading is to be allowed to pronounce according to his own sweet will, and rhyme "fatigue" with "Montague," for such a procedure would have the obvious disadvantage that if the boy went on later to learn spoken English, he would, unless he mended his pronunciation, be unintelligible even to his own fellow-countrymen. The present case of Japan is interesting and illuminating in this connexion. It was suggested that the English Pronouncing Dictionary of Professor Daniel Jones (University College, London) should be adopted as the standard in teaching oral English to Japanese boys. The result of this proposal was an energetic protest, "Why should this Jones seek to impose his Southern English pronunciation on the English-speaking world?"⁴ Now it is obvious that in this case the pronunciation which is to be taught should be that which the largest number of persons will understand, and that in course of time (if it has not happened already) Japan will, like America, evolve its own pronunciation or adopt that of the English dialect most abundantly represented in Japan. The former alternative appears the more probable.

In learning any new language, we tend to interpret the sounds of the new language in terms of our existing repertory

¹ "It is undesirable and impossible to make everybody speak exactly alike. A cultured Scotsman is naturally different from a cultured Englishman and it would be ridiculous to try to turn a Scotsman into an Englishman. The same thing applies to Irishmen and Welshmen. They wanted to get rid only of town peculiarities which are social in their bearing." Frank Jones, *Teachers' Vacation Course*, London. *Daily Chronicle*, Aug. 11, 1923.

² Calcutta University Commission Report, V, page 41.

³ Dauncey, Mrs. C. E., *An Englishwoman in the Philippines*, 1906, page 12.

⁴ *Bulletin of the Institute for Research in English teaching*, Tokyo. Vol. I. No. 1, June 1st, 1923, and New Series No. 2, Dec. 15th, 1923.

of sounds.¹ In most of the European languages the actual letter-symbols are the same, and when we see a, b, c, etc., we read them as such with their English pronunciation. Error may arise in two ways:—

- (1) Through remediable ignorance—*e.g.*, wrong accentuation, misinterpretation of irregular spellings, and similar misunderstandings These are a mere matter of knowledge; there is nothing to prevent a foreigner from looking up “fatigue” in the dictionary and discovering its correct pronunciation. A people as a whole—the Japanese, Bengalis,—will not crystallize an error of this kind in their rendering of English.
- (2) The second type of error is due, not to lack of knowledge but to lack of skill In so far as the two sets of speech sounds fail to correspond, the learner of each language will be compelled either to acquire a new speech movement, or to be content with a more or less incorrect approximation. In order therefore to teach a Bengali (or any foreigner) the correct pronunciation of English it is not necessary to teach him all the sounds of English; nor should we to any two different nationals teach the same set of sounds. We should compare the two languages in question, the mother-tongue and the foreign language to be learned, observe which foreign sounds are unrepresented in the mother-tongue, and teach those only. By a similar process we may predict for any given national what will be his mispronunciations in English—by asking him to write in the alphabet or sound-symbols of his mother-tongue² a set of words representative of the English speech sounds. By taking the majority vote of a sufficient number of such experiments, we may determine what is the Bengali's (or any other nation's) standard dialect of English.

The point is illustrated below: the subjects were 42³ English-knowing Bengali teachers in training; Assamese

¹ Palmer, H. E., *Principles of Language Study*, 1921, page 104.

² It is to be noted in reference to the experiment below that the Bengali alphabet and Bengali spelling are, to all intents and purposes, phonetic.

³ Two teachers were absent on the second day: 33 only were present for the third day (the word “Give” only).

teachers and Bengalis teaching in Assam were tested but are excluded from the record. The English speech sounds are from Palmer's "Scientific Study and Teaching of Languages". The illustrative words were written silently on a blackboard and the students were asked to write them in Bengali character. In case of doubt they were permitted to write the word in two ways: each counted $\frac{1}{2}$ in the tabulation.

The Bengali Spelling of English Sounds (42 cases).

The Sound.	As in	Was re- presented by	In % of cases.	Total Different ways.	REMARKS.
i:	See . .	চ	58	2	
i	Give . .	য	80	5	
e	Pen . .	এ	96	3	
æ	Cat . .	জ+আ	81	4	
a	Now (first vowel).	আ	100	..	
ʌ	Cut . .	আ	95	3	
u:	Too . .	উ	47	8	
u	Book . .	উ	94	4	
o	Go (first vowel)	ও	88	6	
ɔ:	All . .	অ	87	6	
ɒ	Stop . .	অ	100	5	Variations are in the consonants.
ɜ:	First . .	আ	98	6	
ə	Again . .	এ	94	7	
ɛi	Late . .	এ-ই	59	7	
aɪ	Five . .	আ+ই	100	2	Variations are in the consonants.
ou	Go . .	..	..	..	See above.
au	Now . .	আ+উ	84	3	
ɔɪ	Boy . .	অ+য়	98	3	
iə	Dear . .	ই+য়	89	4	
ʊə	Where . .	ও+য়	24	14	
ʊo	Sure . .	ইও	38	17	

The Sound.	As in	Was re- presented by	In % of cases.	Total Different ways.	REMARKS.
p	Put . .	প	100	..	From "pen" above.
b	Be . .	ব	100	..	From "book."
t	Take . .	ট	100	..	From "too."
d	Do . .	ড	100	..	From "dear."
k	Come . .	ক	(100)	..	Not examined.
g	Go . .	গ	100	..	See above.
m	My . .	ম	(100)	..	Not examined.
n	No . .	ন	100	..	From "now."
ŋ	Bring . .	ং	55	7	
w	Wait . .	ওয়ে	46	7	
f	Five . .	ফ	100	2	
v	Very . .	ভ	93	5	
θ	Thin . .	থ	100	2	
ð	Then . .	দ	100	4	
r	Red . .	র	100	2	
s	So . .	ছ	64	8	
z	Rose . .	জ	98	8	
h	Hat . .	হ	(100)	..	Not examined.
l	Lend . .	ল	100	..	From "late."
t̪	Bell . .	ল	98	5	
tʃ	Church . .	চ্চ	65	4	
dʒ	Judge . .	জ	83	9	

TABLE 17.—THE BENGALI SPELLING OF ENGLISH SOUNDS
(42 CASES).

It will be observed that there is great doubt about the English vowels: long vowels are represented by short and *vice versa*. This is due to the fact that the Bengali long vowels are shorter than the English long vowels, while the Bengali short vowels are longer than the English short vowels.¹ The sound does not exist in Bengali: the Bengali substi-

¹ It is maintained by some that there is no difference between the so-called long and short vowels in Bengali.

tutes the sound "a": he is therefore unable to distinguish in pronunciation between "bard" and "bird."

As regards the consonants the Bengali palatal t is more palatal, and the Bengali dental t is more dental than the English, but an Englishman cannot hear the difference; hence this is immaterial. The same applies to d and r. On the sounds p, b, k, g, m, n, h, l, there is practically equivalence between the two languages. In respect of η and t/η the disagreement is merely as to the method of writing the sound: the alternatives are phonetically almost identical.

The remaining sounds are those which are the causes of the Bengali's difficulties in attempting to speak English like an Englishman:—

w—He tends to omit, it,—“ait” instead of “wait.”

f—The Bengali ফ is p-h as in “top-hat.” Hence the Bengali tends to say “p-heet” instead of “feet.”

v—The Bengali ব is b-h as in “Rub him,” hence the Bengali tends to say “bhery” for “very.”

θ—The Bengali থ is t-h as in “Hit him,” hence the Bengali says “t-hin” or “tin” instead of “thin.”

ð—This sound does not exist in Bengali; the Bengali substituted dental d, and says “den” instead of “then.”

s—The sh sound is missing in some Bengalis (especially those from East Bengal). They say “to sun” instead of “to shun.” There are two S sounds in Bengali, S represented by ষ (or স in the case of East Bengalis), and Sh represented by শ (which is mispronounced as S by East Bengalis). Hence the wide disagreement over the word “Sure.” Fifteen Assamese students spelled this word in fifteen different ways.

dz—The English z sound does not exist in Bengali (save in some rustic dialects): the Bengali substitutes জ (j). He is therefore unable to distinguish the words “Zealous” and “Jealous” in pronunciation.

Add to these the difficulty over the disparity in the length of vowels and the absence of ɔ, and we have a fairly complete statement of the Bengali ‘dialect’ of English.

The Bengali is very consistent in his rendering, and faults which are confined to some persons only are recognised

as faults; but faults which all make are considered correct, so much so that a person who speaks correctly is likely to be told that he speaks in an affected manner, or even that his pronunciation is not good.

Certain peculiarities of accent have become established, *e.g.*, Regi'star, ab'surd. Such cases are rare, and are recognised as incorrect by persons of superior education.

THE BENGALI'S NEED OF ENGLISH PRONUNCIATION.

The essential difference between the two types of error, (1) Error of Ignorance, and (2) Error due to Lack of Correspondence of speech sounds, is that the former type of error is at once remediable, for it involves merely a change of a recently acquired habit, whereas the latter involves the acquirement of a new skill and the displacement of a deep-seated habit. Consequently, though it is often not very difficult to effect a temporary remedy of all the above defects (except the absence of *e*), it is extremely difficult to make the remedy permanent. Especially is this so because the student has little interest in or enthusiasm for the work; he does not want to speak differently from everybody else in Bengal, even if it is right.

The conclusion is obvious. The English boy who intends to go to France will be one Englishman among many Frenchmen and must speak French as it is spoken in France; but the Bengali boy is not going to England; he will be one among many in Bengal, and he must speak English as it is spoken in Bengal. America, Australia, Canada have their own versions of the English language.

It is not therefore necessary for us to begin the Bengali's course in English by a laborious effort to make him pronounce English exactly like an Englishman; we may be satisfied if he pronounces it correctly and consistently according to the facilities of his own language. Those likely to have intercourse with non-Bengalis (and they are few) may at a later stage take a Diploma in spoken English as suggested in the Calcutta University Commission's Report¹ or they may from the first obtain their education in a higher, more Anglicised and more expensive type of school.

In any educational programme the case which has chiefly to be considered is that of the *average* child, and it is evident

¹ Calcutta University Commission's Report, V, page 1.

that neither the time and capacity of the average child in Bengal, nor the aptitude and efficiency of the average teacher will permit of so high a standard of English pronunciation as that mentioned above. Bengal will, whether we like it or not, in course of time evolve its own dialect of English pronunciation; and that dialect will represent and be conditioned by the pronunciation, not of the favoured few, but of the less favoured majority. It will be seen from the percentages given in Table 17 that no one dialect has as yet been definitely established: the dialect is in process of evolution. It is of the utmost importance to Bengal that, at this critical stage, the evolution of its dialect of English should be so guided that the result may be something intelligible to English-speaking persons in other parts of the world and in other provinces of India. On what does intelligibility in pronunciation chiefly depend? If we are able to give an answer to this question we shall be able to embody these essential factors of intelligibility in the teaching of the schools to-day, and so in the English dialect of Bengal to-morrow.

Mr. A. Lloyd James, of the Department of Phonetics, University College, London, has made certain enquiries into this problem—not, of course with special reference to Bengal—and the present position of his work is so interesting and likely to be of such importance to the future of English speech in India, that this book would be incomplete without some account of it. Mr. Lloyd James has kindly contributed a short note on the subject.

The Intelligibility of Speech (by A. Lloyd James, M.A., Senior Assistant in the Department of Phonetics, University College, London).

A recent experiment carried out with the aid of wireless transmission has suggested a new line of investigation into the relationship between the pronunciation and the intelligibility of a language. It was found in this experiment that certain English consonant sounds, e.g., *s*, *f*, *th* (as in *thick*) were completely indistinguishable to listeners. Yet, in spite of this confusion, listeners understand perfectly what is said to them. There may be misunderstandings, but they are the exception rather than the rule.

How then does it happen that a type of speech which habitually distorts certain sounds is intelligible? Is it that this confusion is immaterial to a proper understanding of the language? How far can this confusion be carried before speech becomes unintelligible?

It is, of course, a matter of common experience that it is not vitally necessary to catch every sound a speaker utters in order to understand him, but we must catch a certain minimum. Therefore it may be that, in the study of a spoken language, one of the vital factors to be considered is what we may call *The Minimum necessary for Intelligibility*, or the "*Acoustic Minimum*."

The intelligibility of a language is not ultimately and finally dependent upon a correct use of sounds only; there are other factors. We gather something of a speaker's meaning, when he is visible, from his

gestures, facial and bodily. We gather much from the general context, and we gather a great deal from stress, from relative length of sounds, and from intonation. Excluding the visual aids to intelligibility which are not generally associated with a study of speech, we are left with the acoustic aids, and it is possible that all that is necessary for the adequate speaking of a language is the reproduction of its Acoustic Minimum.

It is not by any means essential that the pronunciation of English to be advocated in Bengal should be that of Mr. Henry Ainley, for example. There may be an Indian English, just as there is an American English, but it must be a language which will reproduce the salient features of the Acoustic Minimum of modern English. Otherwise it will cease to be English, and those who speak it will cease to understand English.

If the English of Bengal is to present an English Acoustic Minimum, then it must obey the following condition:—

I.—*The significant sounds of modern English must be kept separate from one another.*—The fact that the actual sound used in Bengal is slightly different from the actual sound used in London is of no great matter, provided that there is no overlapping. If Bengal English uses a dental aspirated *d* for English *th* as in *then*, no great harm is done; this pronunciation is common in Ireland. What is of much greater importance is that there should be no confusion between words like “then” and “den.” The English voiced *th* sound must be kept apart from the English *d* sound.

A comparison of the vowel system of colloquial Bengali* with that of Southern English shows that there exist in Bengali vowel sounds that will serve for all the English simple vowels except the one used in *bird* (*ɜː*) and the one used in the last syllable of words like *sofa*, *better* (*ə*). American and Scotch English get along without the first of these. The absence of the second, however, the so-called English neutral vowel, which is so intimately associated with our stress system, our syntax and our rhythm, is a serious loss.

It is not possible within the brief compass of this note to examine all the discrepancies, but it should be observed that, whatever be the sounds that are used in the English of Bengal, they must obey the following conditions:—

- I.—(a) *No one sound must do duty for two separate English ones.*
- (b) *A sound that is used in English with one significance must not be used in Bengali English with another significance.*
- (c) *Sounds likely to be unfamiliar in other parts of India must be discouraged.*—(If there is to be an Indian English, let it be one that can be understood throughout India.)

II.—*The Rhythm of modern English must be maintained.*

It is impossible to exaggerate the importance of the part played by Rhythm in the constitution of the Acoustic Minimum of a language; consequently it would appear advisable that the English of Bengal should, above all, maintain that most salient feature of modern English, its vigorous rhythm. A language robbed of its rhythm soon becomes unintelligible. Rhythm not only influences our pronunciation: but the syntax of our colloquial language is intimately associated with its rhythm, and consequently with its intonation. There are stresses and intonations of such importance in colloquial English that their significance can be expressed in a foreign language only by a serious syntactic modification. For example, the emphatic stress and intonation on the word “I” in the sentence “I did it” can be expressed in French only by a syntactical construction. The very important distinction between “I was there” and “I was there,” is one suggested in colloquial English by a difference of vowel sound in “was”, by a difference of rhythm and by a difference of intonation; and of these three, the last two are more important than the first.

* See Chatterji, S. K., *Brief Sketch of Bengali Phonetics*, reprinted from Bulletin of the School of Oriental Studies, London; published separately by the International Phonetic Association, University College, London, 1921.

The rhythm of English consists of an impression of even time between its stressed syllables. Therefore it follows that to understand the rhythm of the language we require to know both its stress system and the principles governing the relative length of its sounds. And, inasmuch as the intonation of a language is dependent on its stress system, we are immediately involved with the length, stress and intonation, all three inseparable.

Continued observation of foreign students learning English leads to the conclusion that, if the rhythm and intonation are English, the language begins to sound like English, even when the sounds are not perfect. It is in respect to the rhythm and intonation that the Indian student's English is least satisfactory. The chief faults are:—

- (1) Inadequate length of certain sounds.
- (2) Use of strong forms where English people use weak forms. (The absence of the English neutral vowel is a serious contributing factor).
- (3) The intonation of an Indian language implanted on English.

Two important points emerge from this extremely interesting note:—

1. It is evident that the establishment of a system of equivalencies between the sounds of English and Bengali cannot safely be left to chance and popular opinion; it must be worked out by the expert phonetician so that the minimum of learning of new sounds may be required, yet so that there may be no overlapping of equivalents and no ambiguity. (See Conditions I a, b and c above, in the note).

The second point which emerges from this note is even more important:—

2. It appears probable that correctness of sound is a less important factor in intelligibility than correctness of Rhythm. Now, the learning of new sounds involves the uprooting of habits deep-seated in infancy and their substitution by new and most delicate adjustments. But Rhythm is less fixed, more easily uprooted, less delicate and exact, more subject to conscious control. It is therefore probably more easily acquired. It appears therefore that time and effort directed to rhythm are likely to bring in a larger, surer and more prompt return in the form of increase of intelligibility both of speech and syntax than will a similar expenditure of time and effort on the correction of the individual sounds.

If the sounds be correct according to a standardised system of Anglo-Bengali equivalencies, and if the rhythm is correct, the Bengali—even if his speech be widely different from that

of Mr. Henry Ainley—may yet be intelligible to any English-speaking person in any part of the world. And this intelligibility will have been obtained at a relatively small cost of time, effort and money.

* * * * *

The reader must not be misled by this digression. The essential feature of our proposal is not affected, whatever standard of pronunciation be adopted. Oral use of the language is inevitably involved in the teaching of English reading, and in that oral work a teacher may demand any standard of pronunciation he pleases. The essential difference between the course here advocated and those now current is that in the initial stages no emphasis is laid on the *Active* use of the language either in speech or in writing. That is the essential difference.

SUMMARY.

In studying the Bengali's need of English we must distinguish argument for a second language for boys above the average or for special needs from arguments which apply to all boys and all cases. English in Bengal is not an optional but a compulsory subject, and it is the dominant subject in the school curriculum.

The original reason for introducing the language into the curriculum and the reason for the Bengali's need of it were, presumably identical; and probably are still so. This reason had nothing to do with commerce, with inter-provincial communication or the unity of India: the reason was the insufficiency of the literary content of the Bengali language for a complete education.

At the beginning of the nineteenth century Bengal had a language and a literature, but the literature had to a large extent been lost, and the language was in a state of corruption. There was practically no Bengali prose, scarcely any printing, no standard spelling or received vocabulary.

The development of printed literature in Bengal during the nineteenth century was very rapid: but even to-day, though the output of a literary matter is admirable both as to quantity and excellence, the output of technical and informative matter is meagre in amount and poor in quality.

No "small language," that is, no language spoken by one people only forming a relatively small fraction of the total of literate mankind, can keep pace with the vast variety and complexity of modern knowledge. Thus, though, Bengali literature has developed very greatly since the beginning of the nineteenth century, the Bengali's need of English remains essentially the same. His essential need is of the ability to read English for the purpose especially of information.

An examination of the nature and requirements of the educational system leads by a different path to the same general conclusion. There is only one effective system of education in Bengal—the Anglo-vernacular. Hence this system contains an almost unselected "sampling" of the whole population, and a large proportion of the pupils leave prematurely without completing the course. It is, therefore, necessary

to design courses of study which may possess a liberal "surrender value," and may as far as possible lead to subsequent independent study. Hence in English we must first of all enable the boy to read. This reading bond is, moreover, the easiest of the four languages bonds. The others, speech, hearing and writing, may be taught later to those who wait for them, are more able to master them, and more likely to need them.

An objection may be made to this argument that such separation of the language bonds is logical rather than psychological. The objection is not supported by theory or by fact. The existence of reading ability apart from speech ability, or greatly disproportionate to speech ability is a comparatively common phenomenon.

It may further be objected that a course in reading must be preceded by a course in pronunciation, otherwise the reader may use a grotesquely wrong scheme of sounds, which will interfere with his appreciation, and be a handicap to him should he later proceed to acquire speech-ability.

Mispronunciation may be due to ignorance, as in cases of wrong accent, or to lack of skill. The former type of error may easily be avoided in the process of learning to read. The second type of error is due to the absence of equivalent sounds in the repertory of the mother-tongue. Since the Bengali boy is not going to be one among many Englishmen, but one among many Bengalis, he is entitled to his own dialect, so long as it is consistent and intelligible. Those likely to have intercourse with non-Bengalis (and these are few) may, *without essential modification of these proposals*, acquire a pronunciation correct to English standards.

Lines of Investigation.

In order to develop the proposals in detail and render them practicable we require knowledge of the actual present conditions and of what improvement is possible. It is the purpose of the remainder of this book to set out such information as it has been possible to acquire up to the present.

In detail we have to enquire:—

1. What is the Bengali's present actual reading ability at various stages of Secondary and University education?
2. In what way and to what extent can this reading ability be improved in those who already possess a sufficient vocabulary?
3. What is the English vocabulary of the Bengali at the various stages?
4. What should that vocabulary enable him to read, given the reading ability?
5. In what way and at what rate of progress can silent reading ability in English be produced, starting from zero knowledge of English?

APPENDIX 1 to CHAPTER 5.

The Psychology of Pure Reading Ability in a Foreign Language.

In the case in which there is complete knowledge of a language in both its aspects, Expressive and Receptive, during the process of reading the ideas obtained in reading the language are re-expressed in the same language and to a certain extent in the same words. In the case in which there is no real knowledge, Receptive or Expressive, of the foreign language, the student translates piecemeal into his own language so that the ideas as unit-wholes are built up in the words of the mother-tongue, and are expressed in the mother-tongue. But what is the mental process where the Receptive aspect is highly practised whereas the Expressive aspect is relatively quite inefficient? The point is of some theoretical interest: it is also a test of the type of an individual's reading-ability in a foreign language.

In the writer's own case speaking power in French (which was never more than a weak courier knowledge) has been entirely blocked by Bengali and Hindustani, and it takes several days after landing in France for it to re-emerge: the reading power however does not appear to be affected at all. Trying the experiment of reading half a page and then reviewing the substance I find, that there is no translation¹ during the process of reading. Just before I commence to review I feel that the ideas exist in a formless cloud, which condenses as soon as they are put into words. The words are English, with an occasional French word, but in a fresh review after an interval, the French words all disappear. I find in the first reviewing that there is an unusually vivid visual image of the page.

An attempt² was made to verify this introspection in others; also, by means of the test, to observe different types of reading ability in a foreign language.

Fifteen persons chiefly from the staff of Dacca University were examined. It will be seen that cases 1, 2, 3, 6, 7, are instances of efficient reading ability separated from active

¹ But numbers were read directly in English after a slight sensation of checking.

² With Manmatha Nath Chakravarti.

power over the language, and their main characteristics on the whole agree. (No. 1 is the writer's own record). Case 5 is a case of equal ability, Receptive and Expressive; and cases 4, 9, 11, 15 are "piecemeal translators."

DIRECTIONS.

Do not look at the questions till you have done the reading.

The purpose of the experiment is to study the mental process involved in silent reading of a foreign language in which the reader has little or no power of speech.

INSTRUCTIONS.

Do not look at the questions until you have read the two pages as below.

1. Read silently any language which you can read fairly easily but cannot speak well (*N.B.*—Do not use Latin or Greek).¹
2. After reading about half a page, look up and review in mind the substance of what you have read.

Read about two pages, *viz.*, four "reviews," in this way; then try to answer the questions below. If any points are doubtful, read a third page, or more, in order to clear up the doubtful points, and note "second attempt" against the answer to these questions.

NOTE.—The questions do not concern the substance of the reading: they refer to the mental process.

¹ The reason for the prohibition was that these languages are so frequently studied by verbal translation. It was inserted because it was intended to make the test in England, and the test was printed in England.

PART II—EXPERIMENT.

CHAPTER 6.

The Measurement of the Silent Reading Ability in English of Bengali Students.

THE MEASUREMENT OF SILENT READING.*

It is not necessary to review in detail the large amount of experimental study of the reading process¹ which has taken place during the last twenty-five years. The earliest observations of movements of the eye in reading were made by Javal² in 1879 by means of a microphone. Landolt³ in 1891 used direct observation. Erdmann and Dodge in 1908 employed a mirror. Huey⁴ devised the first practicable method of recording the movements of the eye, using a system of levers and a recording point, these being attached to the cornea by a plaster cup. Dodge⁵ and Dearborn⁶ employed the photographic method now in general use.

These studies have shown that in silent reading the eye proceeds along the line by word-groups, jumping from one

* Throughout the remaining portion of this book the term "Reading" unless otherwise specified, is to be taken as meaning Silent Reading: the term "Silent Reading", unless otherwise specified is to be taken as referring to a composite of Rate (Speed) of Reading and Comprehension.

¹ Huey, E. B., *Psychology and Pedagogy of Reading*, 1910.

Starch, D., *Educational Psychology*, 1919, Ch. XVI.

Smith, W. A., *The Reading Process*, 1922.

Judd, C. H. and Buswell, G. T., *Silent Reading*, University of Chicago, Sup. Ed. Mon. 23, 1922.

Buswell, G. T., *Fundamental Reading Habits*, University of Chicago, Sup. Ed. Mon. 21, 1922.

Gates, A. I., *Psychology of Reading and Spelling*, Columbia, 1922.

² Javal, E., "Sur la physiologie de la lecture", *Annales d'Oculistique*, 1878 and 1879; "Conditions de la lecture facile," *Comptes Rendus de la Société de Biologie*, 1879.

³ Landolt, *Archives d'Ophthalmologie*, 2/385, 1891.

⁴ Huey, E. B., *op. cit.*, and *Experiments in the Physiology and Psychology of Reading*, *American Journal of Psychology*, 9/575, 11/283, 12/292.

⁵ Dodge, R., *Visual perception during Eye-movements*, *Psychological Review*, 7/454, 1900.

⁶ Dearborn, W. F., *Psychology of Reading*, *Archives of Psychology*, No. 4, 1906.

} for a general summary.

} for the most recent work.

fixation to another.¹ During the movement there is no perception. Fixations occupy from 93 per cent. to 96 per cent. of the total time: the duration of one fixation is 0.16 to 0.40 of a second. The number of fixations per line is affected by the difficulty of the matter, but not by its nature:—that is, the fixations do not in any way correspond to grammatical units. The practised reader tends to form a rhythm of fixations, and to keep very closely to the same number of fixations per line in any single reading exercise. There are, with an average reader using newspaper-length lines, 4.8 fixations per line. The indentation is about 18 per cent. of the total at the beginning of the line: there is a lesser indentation at the end of the line. (That is, the eye does not travel right to the end of the line, but sweeps back prematurely to the beginning of next line: it does not begin at the beginning of the line but some little way inside the line.)

The characteristics of the unpractised reader are frequent irregular fixations, a hesitating 'return-sweep' and numerous regressive movements. These regressive movements are extremely marked in the reading of a foreign language.² In the mother-tongue they are a symptom of inefficient methods of reading: in a foreign language they are partly due to an endeavour to gather the meaning of unknown words from the context, and partly to the unfamiliar word-order (as in Latin).³

THE MEASUREMENT OF SILENT READING.

The earliest attempt to measure Silent Reading Ability was probably that of Romanes.⁴ He observed very wide variations of ability and no relation between speed and com-

¹ The reader who has no previous acquaintance with this subject is recommended to try the following experiment for himself:—Place a book on a table in a good light, and arrange a mirror with its lower edge resting on the edge of the book. The mirror should be supported so that its surface may be at an angle of about 110°–120° with the surface of the book. The mirror should be placed with its back to the light; a person reading the book should face the light. If a friend be asked to sit and read the book silently, it will be possible by standing behind him to observe the movements of his eyes in the mirror..... Note the irregular transverse movement, the "fixations" or stoppages—about four or five per line—the rapid "Return-sweep" from the end of one line to the beginning of the next. "Regressive movements" may readily be observed if a passage of a not too familiar foreign language be set for reading.

² Judd, C. H., and Buswell, G. T., *Silent Reading*, University of Chicago, Sup. Ed. Mon. 23, Ch. V.

³ Gray, W. S., *Journal of Educational Research*, IV/1, June 1921, page 10.

⁴ Romanes, G. J., *Mental Evolution in Animals*, 1883, page 136.

prehension: he noted also an apparent absence of relationship between reading ability and intelligence.

About ten years later Miss Abell¹ tested forty-one girls: she observed a very wide range of ability, the best reader being six times better than the worst.

Quantz² noted a positive correlation between speed and comprehension. Huey³ observed a maximum rate of 810 words per minute: he considered that the habitual reading rate of most persons can be improved.

Dearborn⁴ agreed with Huey that the rate of reading can be improved: he found that the best of a group of thirty readers was three times faster than the worst.

PRINCIPLES OF EDUCATIONAL MEASUREMENT APPLIED TO READING.

The greatest difficulty in educational measurement is that of keeping the measure "pure,"⁵—of measuring the one mental function and nothing else. It is not difficult in the present condition of mental testing to devise a test which is easily and quickly applied, which is capable of rapid and objective marking, which is reasonably constant and reliable in its results, a test which, by means of the accumulation of a number of small measures of various functions, will give an average estimate of a sort of "Intelligence Globale"⁶ and yield a satisfactorily large coefficient of correlation⁷ with the teacher's rating or aggregate school marks or any such mixed criterion. But in an educational measurement the difficulty is to avoid correlating too highly with "intelligence globale," since the higher the correlation with so general a measure, the greater the probability that the specific test is not a "pure" measure of a single function.

There are two main types of educational test:—the Analytic test, and the Application test.⁷ The Application test

¹ Abell, A. M., "Rapid Reading, Advantages and Methods," *Educational Review*, VIII, October 1894, page 283.

² Quantz, J. A., "Problems in the Psychology of Reading," *Psychological Review Monograph Supplements*, II/I, Dec. 1897.

³ Huey, E. B., *Psychology and Pedagogy of Reading*, 1910, page 175.

⁴ Huey, op. cit., page 178. For a general account of experiments on the improvement of Silent Reading—Starch, op. cit., page 281; O'Brien, J., *Silent Reading*, 1921 (passim); Smith, op. cit., Ch. VIII.

⁵ See Glossary.

⁶ Claparede, E., *The Nature of General Intelligence and Ability*, (Paper communicated to the International Congress of Psychology, 1925.)

⁷ West, M., "The Teacher and the Test," *School and Society*, XVI, 1922, page 542.

is the ultimate touchstone of school work; it endeavours to present a situation as nearly as possible resembling a life-situation and to measure to what extent the child can apply his school training to that situation. Thus in an "Arithmetic Application test" one might present a page of a ledger, in the normal handwriting of ledgers, to be balanced under the normal conditions of distraction to be found in an average business office. So, too, in reading one might describe a typical adult, an India-merchant, interested in gardening, wanting a good four-seated car, having a boy who will soon have to be sent to a preparatory school, a patron of modern art and realistic drama,—the problem being to find in the minimum time, what there is of interest to such a man in a given copy of a daily newspaper.

A test of this type is not without utility; it measures how far the skill and habits of the class room are "transferred" to actual life situations. But such tests are not "pure" measures of any one function practised in school; at best they measure a compound of many functions for which several teachers have been responsible; thus handwriting and reading will necessarily enter as factors into the Arithmetic Application test; so also will a great many factors which are not the result of school training at all. Into the Reading Application test there enters a large element of general knowledge which is outside the syllabus of most schools.

Such tests are not therefore pure measures of the efficiency of the schooling, for to a certain extent they measure functions which are not susceptible to improvement by practice, or else functions which the school, rightly or wrongly, does not undertake to improve. The ultimate purpose of an educational test is the measurement of the efficiency of the teaching or learning done in school. It is not possible to apportion praise or blame to a teacher, or a method, or an educational system on the basis of a test of which the result is affected by factors which these cannot or do not pretend to affect—as for example Ability to work under conditions of distraction, Knowledge of subjects outside the school curriculum, Liability to fatigue, and so on. .

The Analytic Test endeavours to define as clearly as possible what is the function to be measured, and to measure that or some one aspect or part of it alone. The teaching of a single subject, such as Reading or Arithmetic, may involve the exercise of many individual functions, or groups of functions, and the resultant ability in the subject may be built up

of many individual skills. Each individual mental function must be measured separately and all irrelevant factors must be carefully excluded. The "purer" the test, the more perfect a measure will it be of the work of the teacher and of the child. The more detailed its analysis of the subject, the more valuable will be the test in the diagnosis of the precise location or nature of any defect. A test which shows that a child is "Weak in Arithmetic" is less valuable than one which shows that he is "Fair in Problems but weak in Processes," and that is again less valuable than one which indicates Subtraction as the weak process, and that again less valuable than a test which points to "borrowing" as the weak element in subtraction.

The first step therefore is to define and analyse the function to be measured.

THE ANALYSIS OF READING ABILITY.

The following are mentioned as possible constituents of Reading ability¹:—

1. Power of Visual Perception—

(a) Ability to perceive small differences.

(b) Ability to perceive the characteristic features of words.

(c) Extent of the Field of Vision.

(d) Speed of recognition of words.

2. Efficiency of Eye-movement.

3. Size and Mastery of Vocabulary.

4. Comprehension of directions, of problems, of narrative and of other forms of written matter.

5. Memory—Portative or Index.²

6. Ability to "organise" and arrange material in the mind.

7. Speed of speech, (in the case of oral reading: in the case of Silent Reading, Repression of speech).

1. *Power of Visual Perception.*

There does not appear to be any such thing as general Visual Perception, nor is poor reading ability associated with

¹ Wyman, J., and Wendle, M., "What is Reading Ability?" *Journal of Educational Psychology*, XII/9, Dec. 1921.

² This convenient terminology is from Lathom, H., "On the Action of Examinations," 1877, page 223.

generally inferior perception.¹ There is little relationship between Ability to perceive small differences in drawings or groups of digits and Reading Ability.² There appears however to be an important common factor between Reading, Recognition of correct spellings amongst incorrect forms, Proof Reading, and Ability to detect small differences between words.³ Analysis of special cases shows that the unskilled reader reacts to words vaguely as wholes or to a portion of the word only.⁴ Ability to perceive the characteristic features of words appears to be the main perceptual element in reading.⁵

2. *Efficiency of Eye-movement* is undoubtedly an important factor in reading,⁶ especially in Silent Reading; but improvement of eye-movement is a result of good reading rather than a means for producing good reading.⁷ Observation of eye-movement is not practicable as a test save in cases of individual diagnosis.⁸

3. *Size and Mastery of Vocabulary* are obviously factors in Reading,⁹ but a measure of Vocabulary is not a measure of Reading, nor will improvement in Vocabulary in all cases improve Reading. It is generally better to regard Vocabulary as an impurity in the score of Reading test, (and Reading as an impurity in a test of Vocabulary), for a child's reading ability and his vocabulary are two separate factors in his culture and we need to know them separately.

4. *Comprehension*.—Reading and Comprehension are ordinarily correlated, but they may exist separately, as in the case of the adult illiterate who could comprehend but cannot read, and in the case of the child who can read but cannot comprehend: (such cases are very marked and very common in Bengal owing to the methods of oral reading used in the Primary Schools) The treatment of Comprehension

¹ Gates, A. I., *Psychology of Reading and Spelling*, Columbia, 1922, pages 28, 29.

² Gates, A. I., *op. cit.*, pages 23—25.

³ *Ibid*, page 35.

⁴ *Ibid*, page 48.

⁵ *Ibid*, pages 35, 62.

⁶ There is, however, little correlation between field of vision and rate of reading:—Smith, W. A., *The Reading Process*, 1923, page 133—except perhaps below the age of 10½ (Grade IV); Starch, D., *Educational Psychology*, 1919, page 265.

⁷ O'Brien, J. A., *Silent Reading*, 1921, Ch. VI, X.

⁸ Buswell, G. T., *Fundamental Reading Habits*, 1922, Ch. IV.

⁹ The coefficient of correlation between Silent Reading and Vocabulary is found by Gates to be—Comprehension: Vocabulary, 0.62; Rate: Vocabulary 0.64. Gates, A. I., *Journal of Educational Psychology*, XII/8, Nov. 1921, page 457.

is perhaps the most difficult and debatable point in the measurement of Reading ability.

The relation of comprehension of directions, (etc.), to comprehension of narrative and other types of comprehension¹ has not been fully studied. Comprehension of Directions correlates highly (0.61) with General Intelligence² as measured by Group Tests.

5. *Memory* is usually, but not always, a factor in Reading ability. In certain types of test and in certain life-situations the reader is required to study a passage and afterwards to reproduce it or to answer questions on it: in other types of situation he is required to read a paragraph, and then answer a question on it with the passage still before him. In the first type "Portative" memory is required, for the reader is required to store the matter in his mind; in the second case he is merely required to notice and remember where the answer comes, so that he may look back to it at the time of writing: this is a case of "Index" memory. The measurement of memory will not measure reading ability, nor will improvement of memory in all cases improve reading ability. Memory is therefore a factor which has, as far as possible, to be excluded from the measurement of pure Reading ability.

6. *Ability to organise*³ is demanded in that type of test or situation in which the reader is required to reproduce the matter after reading without the help of questions or a "Completion Form."⁴

7. *Speed of Speech*.—This is a factor in oral reading only. In silent reading the corresponding factor would be ability to repress speech.⁵

¹ Various types of comprehension are enumerated by Sutherland, A. H., "Correcting School Disabilities in Reading," *Elementary School Journal*, Vol. 23, 1, Sept. 1922, page 39.

² Gates, A. I., *Journal of Educational Psychology*, XII, 8 Nov. 1921, page 454. Especially as regards Speed, but less so as regards Accuracy.—Rosenow, C., *Psychological Monographs*, XXIV/5, 1917, page 38. For the meaning of the terms "correlate" and "coefficient of correlation," see the Glossary.

³ Horn, E., "Constructive Programme in Silent Reading," *Journal of Educational Research*, III, 5, May 1921, page 342.

⁴ E.g., "William the Conqueror came to.....in 1066; he defeated Harold at....." The task is to complete the sentence by filling in the blank spaces.

⁵ O'Brien, op. cit., Ch. V.

It is possible to condense the above list of seven factors under two headings, *viz.*—

- I. Mechanics of Reading including Perception, Eye-movement and Speed (or Repression) of speech.
- II. Comprehension including Comprehension of ideas and mastery of Vocabulary.

Memory and Ability to organise are not in the strict sense factors in Reading and are therefore here omitted.

PRINCIPLES OF TESTING.

Tests are of three main types:—¹

Type 1.—Tests which measure *Quality* of work—Difficulty and Speed being constant;² for example marksmanship (in deliberate fire) on the rifle range.³

Type 2.—Tests which measure the degree of *Difficulty* which can be surmounted—Quality and Speed being constant; as in the High Jump.

Type 3.—Tests which measure the *Amount* of work which can be done,—Quality and Difficulty being constant; as in (a) (Amount in unlimited time) a Club-Swinging competition, or in case of (b) (Amount in a given time), a Flat Race.

Applying this classification to the measurement of reading, Type I would be applicable to oral reading only and would be a test of elocution rather than of reading. Type 2 would be a measure of Comprehension and would be in the nature of a scale to measure how difficult a passage a child is capable of mastering, given unlimited time, and neglecting the process or method of attaining this mastery however clumsy. Type 3 (a) would be a mere test of eyesight and endurance; Type 3 (b) would be a measure of Speed of reading, the difficulty of the material and the style or method of dealing with it being held constant.

The three factors above are present in nearly every test: we have to decide in any measurement of reading what factor we are to measure and how we may hold constant all other factors. If we are to measure ability to surmount difficulty in respect of Comprehension, we must hold constant the factor

¹ Burgess, M. A., *Measurement of Silent Reading*, 1921, Ch. VI.

² See the Glossary, "Constant" and "Elimination (of a factor)."

³ The example is taken from Burgess. Physical Drill would be better as an illustration.

of Speed of reading. If we are to measure Speed (that is Amount in a given time, or Time for a given amount) we must exclude or hold constant the factors¹ of Difficulty of material (in respect of thought, vocabulary, sentence-structure, print), also Memory, and Difficulty of reproducing (*viz.*, power of composition, speed of handwriting, ability to understand the instructions of any other form of reproduction, *e.g.*, " True-False " or " Completion ").

The chief criterion of a good test will be the success with which these impurities are excluded from its score. The other criteria² are its Reliability, Objectivity, its Ease of Application, its Ease and Accuracy of Scoring, and the Sufficiency of its Norms.³

We thus find two main types of Reading test—those tests which measure Rate of reading, and those which measure Comprehension:—but, since it is not useful to measure Rate alone apart from Comprehension—(though some tests actually do so)—we may further classify Rate Tests as those which give separate scores for Rate and Comprehension, and those which yield a composite score of Rate and Comprehension.

As regards form the tests fall into fairly well marked groups—the Short Paragraph form, the pure " Comprehension " form (which is always of the Paragraph type but without time limit), and the Continuous Narrative form of test.

THE SHORT PARAGRAPH TYPE OF TEST (RATE AND COMPREHENSION COMBINED).

The Kansas test consists of short paragraphs each followed by a question on the paragraph to be answered by writing a single word, or a few words, or by making a mark of some kind. The score for Rate is derived from the number of words in the paragraphs attempted; that for Comprehension from the number of answers given correctly. Since these two scores are interdependent and closely correlated, and several tests of this type are actually scored only on a single scale, we have grouped all tests of this form under the head " Rate and Comprehension combined." The paragraphs in the Kansas

¹ Burgess, *op. cit.*, page 37. We have not adopted Burgess' list of factors, which is a mixture of subjective and objective. See *Journal of Educational Psychology*, XII/6, Sept. 1921, page 349, for a criticism.

² Gates, A. I., *Journal of Educational Psychology*, XII/6, Sept. 1921, page 305; but he omits Ease of Application and Scoring.

³ See Glossary.

test are of progressive difficulty. The time allowed for the test is five minutes.

Tests of a closely similar nature are:—

*The Monroe.*¹—A later revision of the original Kansas which attempts to eliminate more successfully the factors of General Intelligence and special knowledge.

*The Burgess.*²—Pictures followed by a paragraph. The response consists of some modification of or addition to the picture. The paragraphs are of equal length and difficulty. The score is on a single scale (Rate and Comprehension combined).

*The Reading Test in the Stanford Achievement Test.*³—Short paragraphs with blanks for completion.

*Ballard's Reading Test.*⁴—An imitation of the above.

*The Chapman-Cook Cross-out Test.*⁵—Short paragraphs each containing one word which is discordant with the general sense; the discordant word is to be crossed out.

THE MONROE REVISION OF THE KANSAS TEST.

In its original form some of the exercises of the Kansas Test called for special knowledge of Arithmetic or Geography⁶ Monroe eliminated such exercises in his revision, but there are still paragraphs which are not distinguishable from those of an "Intelligence Test." The coefficient of correlation of the Comprehension scores of Monroe's revision of the Kansas test with Stanford-Binet is 0.37, with a composite score of various Group Intelligence Tests 0.44, and with Directions 0.72.⁷

The Kansas is a valuable type of test in that it will measure down to zero reading ability, whereas most other types of test cannot function unless there be a somewhat consider-

¹ Monroe, W., *Measuring the Results of Teaching*, 1918, page 43.

² Burgess, M. A., *Measurement of Silent Reading*, 1921.

³ Kelley, T. L., Ruch, G. and Terman, L., *The Stanford Achievement Test*, 1923.

⁴ Ballard, P., *The New Examiner*, 1923, Ch. XV.

⁵ Chapman, J. and Cook, S., "The Principle of a single variable in speed of reading cross-out test," *Journal of Education Research*, VIII/5, Dec. 1923.

⁶ Smith, W. A., *The Reading Process*, 1922, pages 246-7.

⁷ Gates, A. I., *Journal of Educational Psychology*, XII/8, Nov. 1921, page 448.

able amount of reading ability present. On the other hand the Kansas type of test is limited as to its upward range: Test I of Monroe's revised version of the Kansas series of tests covers a range of only three years in the mother-tongue, and even within those three years a bright child is likely to finish before time. The test is thus a useful "sounding line."

As a correct measure of reading it is open to several objections.¹ The greatest of these is that the test does not hold constant the method of dealing with the reading matter. The following is a typical paragraph:—

**"Spring is the time for planting seeds. They
grow fastest in summer. Autumn is the
harvest time."**

When are seeds put into the ground?

Gates suggests that in the case of some paragraphs the answer might be guessed: this however is doubtful since one would always suspect a possible catch, but an intelligent pupil would quickly discover the device of looking at the question first and then searching for the answer; and in the example given above he would only have to search as far as the first word. At the same time another type of pupil, more conscientious or less adaptable, will read the paragraphs first, then answer the questions: thus the Kansas test measures really two kinds of ability—(1) Reading ability, and (2) Ability in Searching for the answer; and the test must yield two sets of scores according as it measures the one or the other.

A second disadvantage is the inclusion of writing time. It is true that the amount to be written is very small; for example in Form I (version adapted to Bengal) it is only 21 words. But little children are quite capable of taking five seconds or more in writing a single word: 105 seconds in 300 (the total time allowed) is a very considerable proportion. The Monroe Test Form I is intended for Grades 3, 4, 5, age 9 years 7 months to 11 years 9 months. Using Grade 4 as the mid-point (age 10 years 8 months) we find, taking the mean of the results of Starch,² Freeman,³ Curtis,⁴ and Gary Survey (Free Choice),⁵ a writing speed of 47.9 letters per

¹ Gates, A. I., *Journal of Educational Psychology*, XII/8, Nov. 1921, page 445.

² Starch, D., *Educational Psychology*, 1919, page 303. (Grade 4, Rate 47 letters per minute.)

³ The Gary Public Schools, 1919, page 41. (Grade 4, Rate 51.2.)

⁴ Curtis Practice Test. (Grade 4. Rate 46.)

⁵ The Gary Public Schools, 1919, page 41. (Grade 4, Rate 47.3.)

minute. The test involves the writing of 78 letters; thus $1\frac{1}{2}$ (1.6) minutes out of 5 are spent in writing if a child finishes all the paragraphs; and if he does not finish all, the more he reads the more is his Reading-score diluted with Writing-score. (The original Monroe Kansas Test I involves the writing of 53 letters or signs.)

THE BURGESS TEST.

Gates¹ observes that in some cases the drawing involved in this test takes longer than the reading; the mean percentage of total time spent in drawing in Form A of the test was 21 per cent., in Form B 29 per cent., in Form C 26 per cent.

There is in this test also, as in the Kansas Test, the possibility indeed the probability, of variation in the method of dealing with the paragraphs. After a very little experience of the test the reasonably intelligent child may not trouble to read the "verbiage" in the first half of the paragraph but will "skip" till he comes to the word "pencil" or "draw." By so doing in Section 1 of Form I of the test he may omit 3 lines, in Section 2 three lines, Section 3 one line, Section 4 two lines, and so on. If all used this procedure there would be no harm, since the results then would be uniform, and this procedure is an entirely justifiable and reasonable one for dealing with the situation presented; but as the test stands it is bound to yield two types of score corresponding to the alternative methods of response.

THE CHAPMAN-COOK CROSS-OUT TEST.

A related criticism of the Burgess scale is made by Chapman and Cook² who point out that fundamentally reading is a matter of regular and orderly eye-movements along the lines of print, whereas in the Burgess test there must be an up and down movement of the eye between the matter and the picture. The authors propose a new type of test containing short paragraphs in each of which one word spoils the meaning of the paragraph; the ill-chosen word is to be deleted, e.g. "*The Woman burned herself badly while she was making soup for our Sunday dinner, just because she was so careless as to tip over a pan of cold water.*" Such a test would, for the lower grades, be probably a very useful one; but, whereas the Burgess and the Kansas tests do not allow for the skilled

¹ Journal of Educational Psychology, XII/7, Oct. 21, page 387.

² Journal of Educational Research, VIII/5, Dec. 1923.

reader, this test definitely penalizes him; for the rapid and skilful reader would tend mentally to correct the errors and so pass them over. For the skilled reader it is a test rather of proof-reading than of normal reading; thus it is open to the same objection as the two previous tests,—that the skilled reader in this test cannot, and in the Burgess and Kansas tests is not encouraged to show the full extent of his superiority.

THE STANFORD ACHIEVEMENT TEST AND BALLARD'S TEST.

Both these tests are of the same nature, *viz.*, short paragraphs with missing words to be filled in. The amount of writing required is, relatively to the text, even greater than in the Kansas. The paragraphs increase in difficulty of idea and of vocabulary and the problems contained in the later paragraphs are indistinguishable from those found in many Group Intelligence Tests.

THE CONTINUOUS PROSE TYPE (RATE AND COMPREHENSION SEPARATE).

The tests in this group are those of Starch,¹ Brown,² Adams,³ Fordyce,⁴ Burt (The Golden River Test),⁵ Courtis,⁶ Stone.⁷

These tests make use of a long continuous narrative; this narrative is read by the children and the speed of reading is recorded in words per minute; after reading the children either write out the substance or answer questions.

In the Starch test the children read, and after thirty seconds mark the last word read: they then finish reading the story and write out the substance from memory. Starch considers that the number of words written is almost as useful a measure of comprehension as an actual score of ideas. The weakness of this test, apart from the method of scoring comprehension, is that there is no connexion between speed and comprehension in the latter part of the test,⁸ *viz.*, that part read after the first thirty seconds.

¹ Starch, D., *Educational Measurements*, 1917, Ch. IV.

² Brown, H. A., *Measurement of Ability to Read*, 1916.

³ Adams, W. C., *Silent Reading Tests*, 1916.

⁴ Fordyce, C., *A scale for measuring Achievements in Reading*, 1916.

⁵ Burt, C., *Mental and Scholastic Tests*, 1921, page 351.

⁶ Stone, C., *Silent and Oral Reading*, 1922, page 236.

⁷ The Stone Series of Narrative Reading Tests, 1922.

⁸ The same applies to the Brown Test: Gates, A. I., *Journal of Educational Psychology*, XII/6, Sept. 1921, page 311.

In the Brown test the procedure for rate is similar to that of Starch. For Comprehension the story is written out and marked for ideas. Burt criticises this method on the ground that a child "may precipitate whole clauses, word for word, without having absorbed a particle of their meaning."¹

The procedure in Adams and Fordyce is closely similar to the above, but the children are required to answer questions instead of writing out the substance.

Burt's Test should not strictly be included here as the story is read aloud by the pupil. The time for reading the whole passage is noted; oral questions are then given. The test could however readily be used as a test of Silent Reading.

In Stone's Test the children are required to read the whole of the story: successive numbers are displayed every five seconds; the child notes the number on completion of the reading: this gives the time taken to read the passage. The child then answers questions.

In the Courtis Test the method of measuring rate of reading is similar to that of Starch. Comprehension is measured by presenting the passage again paragraph by paragraph, each paragraph being followed by questions: there is thus no connexion between the Rate test and the Comprehension test: a child might read very fast and understand nothing in the first part of the test and read very slowly in the second. The coefficient of correlation between Rate and Comprehension varies from 0.82 in Grade III to -0.27 in Grade V.²

MEASURES OF COMPREHENSION WITHOUT RATE (PARAGRAPH TYPE).

The best known test of Reading, Comprehension without Rate, is the Thorndike-McCall Scale;³ this contains short paragraphs each followed by three or four questions. The paragraphs are of increasing difficulty. The answers in most cases cannot be derived from the text direct, but involve reasoning. The last paragraph of Form II (a sonnet "I see thee pine like her in golden story") involves ability to analyse a very complex sentence. The time limit is nominal and the children are told not to hurry.

¹ Burt, C., *Mental and Scholastic Tests*, 1921, page 278.

² Gates, A. I., *Journal of Educational Psychology*, XII/8, Nov. 1921, page 451.

³ Thorndike-McCall Reading Scale, 1920. Also McCall, W., *How to measure in Education*, 1922, Ch. IX; and *Teachers' College Record*, Jan. 1921.

The 'Thorndike Alpha' is a very similar test, but the paragraphs are longer.

The Van Wagenen Reading Scale² contains long paragraphs of rather complex material followed by four or five statements; those statements only are to be checked which can be derived from the text.

The Haggerty Reading Examination³ contains paragraphs of varying length, followed by a correct phrase to be underlined (among a collection of four), a true statement to be checked (a choice of three), a false statement to be checked (a choice of three). The paragraphs are of increasing difficulty.

The most obvious features of tests of this type is the difficulty of distinguishing between them and Intelligence Tests. If the function here measured is Reading, then we may ask what is an Intelligence Test? In what way does the Thorndike Intelligence Examination, especially questions 1/a—1/b, Part D.-II,⁴ differ from a reading test? Wyman and Wendle find that the Terman Group Test of Intelligence is the best of Reading Tests.⁵

The coefficient of correlation between the Thorndike-McCall test and the composite of various Group Intelligence Tests is 0.69:⁶ its correlation with Stanford Binet Mental Age is 0.47.

The essential difference between a "mental" and a "scholastic" test is that the former measures (or is supposed to measure) the original nature of the pupil as raw material for education, and the latter the finish of the finished result of education. By dividing 100 Educational age by the Mental age, we obtain A. Q. the Accomplishment Quotient, which should in all cases be 100, meaning that the boy's school progress is that which is to be expected from his mental age. This calculation would be of some value if we could be sure of obtaining pure measures, but at present there is no measure of mental age which is not to a large extent influenced by

¹ Thorndike, E. L., Reading Scale Alpha, 2, 1920. Also Teachers' College Record, Sept. 1914; Nov. 1915; Jan. 1916; May 1917.

² Van Wagenen, N. J., Van Wagenen Reading Scale, 1922.

³ Haggerty, M. E., The Ability to Read: its measurement and some factors conditioning it, Indiana University Studies, No. 34, 1917.

⁴ Thorndike Intelligence Examination for High School Graduates 1919.

⁵ Journal of Educational Psychology, XII/9, Dec. 1921, page 530.

⁶ Gates, A. I., Journal of Educational Psychology, XII/6, Sept. 1921, page 309.

the effects of training;¹ and conversely every educational measurement tends to a certain extent to be a measure of native intelligence. This is more noticeable in some school subjects than in others: thus it is hardly possible to measure ability in Arithmetic Problems without measuring at the same time an aspect of General Intelligence; on the other hand there is no reason why a measure of Handwriting, or Arithmetic Processes, or Spelling, should not be an almost pure measure of the effects of training.

Our purpose in measuring the products, or effects, of education is to estimate the efficiency of the educational system (or of some portion or aspect of it). Education is defined by Starch as "the production of useful changes in human beings,"² by Thorndike³ as "changing human beings for the better." We desire to measure, then, the amount of change which the educational system is able to effect in a given time. The innate capacity is unchangeable: hence it is necessary that we should keep our measures of educational products as pure as possible from such a factor. As "Application Tests" such pure measures may have little utility, but they are not so intended: as measures of teaching result they will be the fairest to the teacher, for it is not reasonable to condemn a teacher because his pupils are naturally dull-witted.

These principles may be applied to the measurement of reading ability. The term "difficulty" applied to a test of reading ability usually refers to the difficulty of comprehending ideas contained in the material of the test. The power of comprehending difficult ideas is a matter of natural intelligence. Native intelligence improves with natural growth but shows little improvement as a result of practice. In testing ability to cope with this type of difficulty in reading we are therefore measuring a function on which practice exerts little influence. The test is therefore useless as a measurement of the very thing which we are required to measure,—namely the effects of a system of practice.⁴

¹ Gordon, H., *Mental and Scholastic Tests among Retarded Children*, Board of Educational Pamphlet, No. 44, 1923, page 81. Burt, C., *Mental and Scholastic Tests*, 1921, pages 180—184.

² Starch, D., *Educational Psychology*, 1919, page 1.

³ Thorndike, E. L., *Education*, 1912, page 52.

⁴ Horn, E. A. ("A constructive programme in Silent Reading," *Journal of Educational Research*, III/5, May 1921), complains that undue attention has been paid to the measurement of Rate of Reading merely because it is very susceptible to improvement. But surely this appears to be a very good reason; if it were not improvable, there would be (educationally) no reason for measuring it.

These remarks are justified in respect of the Thorndike-McCall Test by Gates¹ who finds that the test does not indicate the effects of specific training: that the scores appear to be determined mainly by mental age. In so far as this is true, the test, as a measure of the teacher's work, is therefore useless.

If we are to measure what changes the teacher has made in the pupil, we must "hold constant" (in the phraseology of Burgess) those things which he has not changed and cannot change, *viz.*, natural Intelligence. The correlation of reading (both Rate and Comprehension) as measured by existing tests with mental age tends to be lower, the lower the grade;² in other words, in the lower classes the test differentiates the pupils in respect of their ability to puzzle out the words, that is, an acquired ability; whereas in the higher classes, where all can read with a sufficient degree of skill, the test tends rather to differentiate the pupils in respect of their ability to follow the ideas. Thus Reading itself is "held constant." Indeed the Group Intelligence test is really based on the assumption that Reading ability is held constant.³

In fact we apply one test, assume that Reading ability is constant, and call it an Intelligence test: we apply another similar test and call it a test of Reading ability.

VOCABULARY.

It may however be argued that the Difficulty which increases in the Reading scale is or should be a difficulty not of idea but of vocabulary or of some other factor. Burgess⁴ says, "Ideally the scale for difficulty is reserved for the measurement of ability in those subjects where the amount of time has no effect on the score. So that the child can answer correctly at once or not at all." Either the child knows and can supply the meaning of a "difficult" (*viz.*, rare) word at once, or he cannot supply it at all (because he does not know it): this is a use of the term "difficulty" in the sense of "rarity." It cannot however be said that either a child can understand a theorem of geometry at once or he will not

¹ The Psychology of Reading and Spelling, Columbia, 1922, page 60.

² Gates, A. I., *Journal of Educational Psychology*, XII/8, Nov. 1921, page 459; *Psychology of Reading and Spelling*, 1922, page 15.

³ The falsity of this assumption in certain cases is shown by White, W., "Influence of certain exercises in Silent Reading on scores in the Otis Group Intelligence Test," *Educational Administration and Supervision*, IX/3, March 1923.

⁴ *Measurement of Silent Reading*, 1921, page 82.

understand it at all: this is a use of the term "difficulty" in the sense of "complexity."

The difficulty of knowing or not knowing, of rarity rather than complexity, in respect of reading is Vocabulary. But any continuous passage is necessarily a bad test of vocabulary since a child can often guess a difficult word from the context, or even do without it. Moreover one child may score low because of a small vocabulary, another because of lack of reading power, another because of low reasoning ability, yet these three scores will be indistinguishable.

We have already seen that it is necessary to hold constant the difficulty of reasoning: Burgess¹ attempted, while holding difficulty of reasoning constant, to construct a reading scale of greater difficulty in respect of vocabulary. The attempt was unsuccessful.

The measurement of vocabulary in the mother-tongue is not a very difficult task; and in our own problem, which deals with a foreign language, it is even easier.² The value of a separate measure of vocabulary as distinct from a measure of reading ability is evident. It is therefore better to hold vocabulary constant and to measure it separately afterwards.

If, then, neither difficulty of vocabulary nor difficulty of idea are to be measured in a reading test, it follows that the measurement must be in terms of Rate. What then is to be the treatment of Comprehension?

THE RELATION OF RATE AND COMPREHENSION.

It is commonly stated that a high correlation exists between Rate and Comprehension in reading: Gates³ finds the mean correlation of the composite of Speed tests and the composite of Comprehension tests to be 0.84. It is however to be noted that in many of the existing tests of silent reading (upon which also this figure is based) the Rate and Comprehension scores are so connected that a high score in the one is not possible without a high score in the other. This remark applies to all the Paragraph tests.

Stone⁴ using a test of a different type, and the only test in which the time taken to read the whole passage is measured and no re-reading allowed, finds a small inverse correlation

¹ Op. cit., page 156.

² See Chapter 8 below.

³ Psychology of Reading and Spelling, 1922, page 49.

⁴ Stone, C., Journal of Educational Research, VI/2, Sept. 1922, page 111.

between Rate and Comprehension. He finds that of 31 per cent, fastest readers, none were above median comprehension, and 40 per cent. were inferior in this respect. One may however doubt whether it is legitimate to compare as mere quantitative differences the performance of one child who reads a passage at 600 words per minute and obtains 50 per cent. of the ideas, with the performance of another child who reads the passage at 50 words per minute and reproduces 100 per cent. ideas. Are they both doing the same thing? Still more questionable would be the comparison of two such performances the material being different. Horn¹ considers that there is no such thing as "Rate" in silent reading but a number of "Rates" varying with the material: the mean rate of Grade VIII with one type of material was found to be 185 words per minute, while with another it was 198 words per minute.² The point is obvious, and it would be very easy experimentally to produce a very much wider difference. Thus in our own experiment on Question-density the difference of rate at 20 questions per 1,000 words, and at 1.3 questions per 1,000 words,³ was (1.3/20 questions), 728/220, 610/166, 499/182 words per minute or an improvement of 231 per cent., 267 per cent., 174 per cent. respectively on the 20-questions-rate in three different sets of material. The only variable here is the amount of ideas to be abstracted from the given passage, the difficulty and nature of the passage remaining the same in each pair of tests. The shape of the graphs indicates a distinct change of response somewhere between 300 and 600 words per minute.⁴

DIFFERENCE OF RATE IS AN INDICATION OF A DIFFERENT METHOD OF APPROACH.

Given simple narrative material the attitude of various readers will differ very greatly. Pyle⁵ notes this point in connection with a test not of reading, but of memory:—"If

¹ Horn, E., "A constructive programme in Silent Reading," *Journal of Educational Research*, III/5, May 1921. Also Germano, C., "Outlining and Summarizing compared with Re-reading," *National Society for the Study of Education*, 20th year-book, 1921, Ch. VII; and Hulton, C. E., *A Study of the Speed of Upper Grade Reading*, *Journal of Educational Research*, X/2, Sept. 1924.

² Pressey, L. and S. (*Journal of Educational Psychology*, XII/1, Jan. 1921) by altering the matter of existing reading scales produced wide differences in the norms. See also Judd and Buswell, *Sup. Ed. Mon.* 23, 1922, page 28, showing the effect of the nature of the material on the number of fixations per line.

³ See Table 42 below.

⁴ See Diagram 7 and Graphs 2 to 5.

⁵ Pyle, W. H., *Psychology of Learning*, 1921, pages 115-16.

we read a story to children and later determine how well the story is retained, we find retention better up to near maturity. There seems little increase in ability to retain experience after about thirteen years of age. In fact experiments often show a falling off of ability to reproduce stories during school age. It is quite likely that this apparent decrease in memory capacity is due to a certain attitude of the subjects and not to any decrease in retentive capacity. In the earlier years children reproduce parrot-like stories read to them without discrimination. Older children reproduce only the salient facts, through habit omitting details. This attitude results in a lower score."

The table given below illustrates this point. The table is extracted from Pyle's *Psychology of Learning* from which the quotation above is taken.

The "Marble Statue" Test.

Age.	Boys.		Girls.	
	Number of cases.	Mean Score.	Number of cases.	Mean Score.
8	102	24.3	89	28.5
9	148	28.7	158	21.0
10	142	30.0	138	33.5
11	149	32.0	156	36.4
12	156	35.1	191	38.1
13	163	33.8	164	38.5
14	129	36.1	146	39.0
15	80	36.5	99	39.1
16	60	34.4	94	37.3
17	45	34.6	81	36.6
18	65	38.3	86	40.1
Adults	65	38.3	86	40.0

TABLE 19.—The Marble Statue test, as an example of the effect of difference in the method of approach on the scores obtained in a Reading Test.

In fact the small child laboriously plods through the story in precisely the same way in which he would plod through a bit of his history book, whereas the older child diagnoses it as "just a simple story" and tears the heart out of it. Now there is no doubt as to which procedure is the correct one, for it is an absurd procedure to read a simple story with the same detailed attention and memory effort as that which would be used for the narrative of a witness in a murder case, or the perfect wording of a master-poet. Yet such is the habit of the schools that the infection of it has been caught by the psychologists, and in many of the tests success in obtaining the full score in Comprehension would be an argument of inability to adjust oneself effectively to the requirements of a reading situation.

In the Brown Test¹ an extremely simple story is set, 746 words in length: its substance is as follows:—There was a school at the top of a long steep hill; and the children used to slide down the hill in the recess. Frank Lane had an uncle who was a carriage builder, and this carriage builder gave the boy a sled. The boy invited all the school to a ride on it in the recess. The sled went so smoothly that at the foot of the hill it got onto a logging road, and then onto a frozen stream and could not be stopped: so that at the end of the recess no children were present at the school. It took them so long to come back that they did not return till dark. This slide was a record:—it was also the last taken during the school recess.

This is a reasonable précis of a very simple story,—yet, marking it according to the directions of the author of the test it scores only 28 per cent². Some of the points omitted are:—

1. Some of the children in the country attend school.
2. The school is known as "Long Hill School."
7. The boy named his sled "Simoon." (Then follow nine points regarding the alarm of the teacher.)
31. The boy had not intended to escape school.
36. He did not know what would happen to him.
37. He can bear a severe punishment, etc.

¹ Brown, H. A., *Measurement of Ability to Read*, 1916.

² Op. cit., page 12. Incidentally the main point of the story, namely, that the boy's uncle was a *carriage-builder*, (hence the efficiency of the sled) is omitted in the official Key!

The Brown test is condemned by Gates¹ (on other grounds), but tests of common use and popular standing are little better. The first paragraph of the Courtis test² (three and a half lines) states that there was a nice children's party on the lawn, and a Maypole. Courtis asks—

1. Were the children going to have anything to eat?
2. Were they going to play on the grass?
3. Were they going into the house to dance?
4. Were the baskets to be full of flowers?
5. Was it Daddy who tied the ribbons to the pole?

This is not a "reproduction" test: the reader can look back at the text; hence the test will not actually yield wrong scores, but it will certainly tend to create in the child's mind a very wrong idea of what constitutes efficient reading.

There is no evidence that Burt in his "Golden River" test penalised the child who remembered too much: had he intended to do so he might have awarded zero for all inessential ideas. An adult reading through the passage set in this test gathers that: On his way out of the town Tom passed the prison and saw his brother William at the window. He shook his bottle of holy water at him, mocked at him, and went on his way. It was a nice misty morning, and the valley looked beautiful (and the scene is well described by the writer).

This scores 60 per cent. We have omitted to state—

- (1) and (2) Two remarks made by Tom in taunting William which are summarised in the words "mocked at."
- (3) That William was angry at being taunted.
- (4) That Tom was feeling pleased with himself.
- (5) That Tom was going to find the Golden River. (We took it for granted. The point occurs very incidentally in this passage "It was a nice morning that might have made any one happy even if there were no Golden River to seek.")
- (6) Tom was carrying a basket.
- (7) The whole of the mountains could not be seen very clearly.
- (8) Pines were growing on the edge of the rocks.

¹ Gates, A. I., An Experimental and Statistical Study of Reading and Reading tests, *Journal of Educational Psychology*, XII/6, Sept. 1921, page 311.

² Stone, C., *Silent and Oral Reading*, 1922, page 238.

But if these items are to be included, why not also the fact that William was visible because he was looking through the bars, that he shook the bars, that the tops of the mountains were in sunlight?¹

The ultimate test of what should be awarded marks and what should not, is what an average intelligent adult of literary taste reading the passage for pleasure as a part of a continuous narrative would remember. An adult would, we imagine, remember that Tom set out to find the Golden River and that on the way he taunted William (and possibly that there is a good description of early morning in the mountains). These are the essentials,—and they score 30 per cent.—presumably a failure by ordinary examination standards. On the other hand it is possible for a child completely to miss the point of the passage and yet get half marks:—"A boy called Tom (1) came out of the town (2) on a nice (3) morning (4) carrying a bottle (5) and a basket (6). He felt pleased with himself (7). In the distance were mountains (8) partly covered with mist (9) and pine trees growing on the crags." (10).

Any reading test is a test of a child's ability to cope with a certain situation: if the child does not cope with the situation his score must necessarily be zero. If he obtains an excellent Rate score and 50 per cent. on Comprehension but misses the point of the story, he cannot be said to have been measured by the test. He may be able to read quite efficiently, but on this occasion he has failed to demonstrate the fact.

We may therefore measure reading in one of two aspects:— We may measure how difficult a story or passage the child is able to understand, or we may measure how long a time the child takes to grasp the point of a story of a certain degree of difficulty. We have already rejected the first test as not being a test of reading but of intelligence. The second remains—the measure of the time taken by the child to deal with a "reading situation" presented to him. If he does not deal with it, the time-measure is meaningless: if he does deal with it, we discover whether he can do so in a reasonable time. We turn to the imaginary problem of finding what there is in the newspaper that would be of interest to an indi-

¹ It is to be remembered that, as the test was used by Burt, the child was required to read the passage aloud, hence the child would have no opportunity for selective skimming and the highly skilled reader no opportunity of proving his superiority.

vidual with certain stated tastes and activities, *e.g.*, an India-merchant (see page 142): any one who can read and understand words can solve this problem, given a sufficient time—time to read the newspaper through from end to end: but the person who can really be said to be able to deal effectively with an ordinary English newspaper will not take longer than, say, half an hour.

Comprehension must therefore be “held constant”; and this means that we must require such a degree of comprehension from all those tested as will qualify them to be considered as having fulfilled the conditions of the test. Higher comprehension than this is not required and is therefore given no value. The score must be derived from the time taken to qualify in the particular problem, that is, the particular type of Reading.

Types of Reading.

Three types of reading are enumerated by Courtis¹:—

1. Observational Reading (*e.g.*, Novel reading).
2. Selective Scanning or “Skimming” (*e.g.*, Searching for a fact or reference.)
3. Intensive study.

We might elaborate this classification as follows:—

1. Observational Reading . (a) for plot or substance.
(b) for literary appreciation.
2. Scanning (or “Skimming.”) (a) Semi-purposive—to see if there is anything important in the material.
(b) Purposive—(i) to get a specific fact or specific facts from the Material.
(ii) to get a general idea of the scheme or contents of the material.
(iii) To pick out important details from the material (having mastered the general scheme).
3. Study (a) accompanied by memory effort, for Rote or for Rational memorization,

¹ Courtis, S. A., *Journal of Educational Research*, IV/4, Nov. 1921.

- (b) involving analysis of word-meanings and of sentence structure, for understanding of a difficult passage,
- (c) accompanied by imagination of implications and of possible misinterpretations (as in legal work).

Viewing the above list, we should feel inclined to agree that, "there are so many specialised reading abilities necessary to the proper performance of school duties and the satisfaction of the responsibilities and privileges of society"¹ that it seems almost impossible to test Reading as a single function at all. Probably it is impossible to test reading as a single function, but it may be possible to measure some very common or very useful type of reading, or some factor common to several of the more important types. Is there any such factor or type in the above list?

A COMMON FACTOR.

It is obvious that any measure of 3 (a), Study *plus* Memory effort, 3 (b) Study *plus* Analysis, or 3 (c) Study *plus* Imagination might be a valuable "Application Test" or "Intelligence Test", but could not be considered to be a pure test of reading: further that 1 (b) Observational Reading for literary appreciation is not amenable to measurement owing to its subjective nature. Observational Reading for plot, 1 (a), and Purposive and Semi-purposive Scanning, 2 (a) (b), remain.

Observational Reading means reading which is not done under any pressure of time or need. As soon as we introduce into 1 (a) an element of time or hurry, it becomes 2 (bii) "Purposive Scanning to get a general idea of the scheme or contents." Obviously nothing is lost by introducing the time factor, nor is any impurity introduced; hence we may confine our attention to the types of Group 2 only. The common factor of these is Scanning, or Skimming,² whether semi-purposive or purposive.

It should be made clear at this point that by skimming we do not mean rushing through a book in a careless manner

¹ Zirbes, L., *Journal of Educational Psychology*, XII/6, Sept. 1921, page 354.

² "Scanning" is the American word, meaning Skimming: the word "Scanning" possesses the advantage that it does not connote superficiality, whereas "Skimming" rather tends to do so.

so as to obtain a faulty and imperfect grasp of its substance. We have required that, whatever be the reading situation used as a test, it must be dealt with adequately in order that the test may yield a score of any kind. If a grasp of the substance of the whole book is the reading situation used, then a faulty and imperfect grasp should yield no test-score. On the other hand we can conceive of reading situations which do not require a grasp of the whole book, but as in 2 (bi) the finding of a specific fact or facts, or as in 2 (bii) the obtaining of the general scheme of the book either for mental index or for subsequent supplementation from that book or from other sources.

THE VALUE OF SCANNING.

We venture to maintain that the Purposive Scanning situation is the most valuable and the most common of all reading-situations. It may be admitted that a measure of the response to this situation will be no index of a pupil's ability to appreciate poetry, nor of his power to memorize his part in a play, to thread his way through an abstruse argument, or to find a loop-hole in a bye-law; but in such situations the actual reading element is small; even the worst qualified in the actual art of reading would not be seriously handicapped by that deficiency if he were otherwise well equipped. On the other hand that quality which enables a man to tear the heart out of a book, the power of surveying materials rapidly and snatching from them just what is needed, is the essence and the severest test of reading ability, the most useful and most necessary type of reading response. "As the pupil advances from grade to grade the amount of reading which he must do necessarily increases. It becomes increasingly important that he should be able to survey the materials rapidly, often in advance of more detailed study, for the purpose of determining the general trend of the discussion and the points of emphasis It is doubtless at this point more than anywhere else that the experienced and trained adult surpasses the high school pupil and the elementary pupil in reading efficiency."¹ In the words of Hon'ble A. J. Balfour, (Lord Balfour), "He has only half learned the art of reading who has not added to it the even more refined accomplishments of skipping and of skimming."²

¹ Smith, W. A., *The Reading Process*, 1922, page 195. See also Judd and Buswell, *op. cit.*, page 152, as to the need of teaching a child how to adjust his type of reading to a situation, and the danger of neglect of this precaution.

² Balfour, A. J., *The Pleasures of Reading*, 1888, page 42.

THE REQUIREMENTS OF A READING TEST—SUMMARY.

In any measurement it is necessary to eliminate certain factors while others are measured. In the measurement of Silent Reading we must eliminate—

1. *Vocabulary Difficulty*—because a separate measure of this is more useful and more efficient.
2. *Difficulty of Comprehension*—because this factor is largely unimprovable by school-practice.

We must hold constant—

3. *Amount of Comprehension*—Given any material the amount of comprehension required will depend on the reading situation. If the requirements of the reading situation are not made clear, the scores obtained cannot be homogeneous. Further, since a reading test is a measure of ability to cope with a reading situation, any person who falls below the requirements of the test in respect of comprehension cannot be considered qualified to obtain a score of any kind.

THE TECHNIQUE OF ELIMINATION.

A factor is “eliminated” by preventing it from influencing the test scores; ideally the best method of dealing with such a factor is to make its influence zero, *viz.*, to exclude it from the test altogether, as the influence of speed of handwriting on a Group Intelligence Test may be eliminated by excluding handwriting altogether. On the other hand we may eliminate a factor by raising the score obtained in it to the maximum in all cases. Thus we may eliminate the influence of arithmetical processes in a test of arithmetic problems by making the figure-work so simple that all obtain full marks in that respect. In the present instance we may eliminate Vocabulary, by making the vocabulary so simple that it offers no obstacle to any suitable person tested, and hence exerts no discriminating influence. Similarly we may eliminate Difficulty of Comprehension by making the substance so simple that no one can find any difficulty in comprehending it. “Holding Constant” has the same meaning as “elimination”, *viz.*, we require from all a certain amount and what all achieve equally does not influence the score.

We are thus left with a test yielding a single score, and that score is derived from Time—the time required to deal effectively with a certain reading situation.

EXPERIMENT IN THE METHOD OF RECORDING TIME.¹

In constructing this test it was first necessary to devise a technique for determining the time-score, *viz.*, to discover what would be the smallest unit of time which could be conveniently recorded, and what should be the exact technique for recording it. If the units were made too small it would not be possible to record the time-scores accurately, especially in the case of a large class; if it were made too large, the scoring would be coarse. A preliminary investigation was made with five students of average arithmetical ability; an assignment of sums was given and the boys were told to stand as soon as the work was finished. The timekeeper called out the times (using varying units on various occasions). The supervisor noted the times on the boys' papers. It was found that five seconds was a convenient unit; later however it was found that a unit of six seconds would be superior, as the watch dial could then be repainted with ten instead of twelve divisions and the scores given in decimals. This method obviates inconvenient calculations in transposing the scores from Units into Minutes. It was discovered too late to be used, but has been embodied in the mechanical Time-Recorder devised subsequently.

In these preliminary experiments the time was called out: in actual tests it was found that the calling out of times was apt to disturb the class even if done very quietly, and further that where several boys stood up within the same unit of time, the supervisors tended to forget the number of the unit. It was therefore found more convenient for the time-keeper to write up the scores on the black-board. Robinson² describes a system of cards which are turned over to indicate time-scores: this would be a useful device if it were automatic, but since it is not, it has little or no advantage over writing up the scores on the black-board. An automatic Time-Recorder has since been devised by the author and C. F. M. West.³ In Stone's Test which in some respects resembles that described below, though independently devised, the boys themselves record the times on their papers. It is our experience that boys in Bengal cannot be relied upon to do this even in practice classes where there is little or no motive for inaccuracy: in a formal test such a procedure would be most untrustworthy.

¹ The tests in this chapter were conducted in association with Mr. Karim Ahmad Khan Lodhi (Babu C. C. Chakravarty also assisted).

² Robinson, B. W., *Journal of Educational Psychology*, XIII/8, Nov. 1922.

³ See Appendix to Chapter 7.

The final procedure for time-scoring was that the boy stood (or made a motion of standing) as soon as he had finished: the time-keeper who was watching the class continuously wrote up the time on the board using five-second intervals; the supervisor recorded the time on the paper and collected it, at the same time checking to see that the conditions of the test had been fulfilled. A simple system of inconspicuous signals was arranged between the time-keeper and the supervisors to deal with cases of doubt or confusion.

EXPERIMENTS IN THE METHOD OF RECORDING COMPREHENSION.

In order to produce a certain type of reading it is necessary to inform the boy beforehand how many questions and what type of questions are to be answered. The boy then knows precisely what type of reading is required: if he fails to respond with a suitable type the fault lies in his inability and not in the test. The simplest and least equivocal situation in this respect is one in which the pupil reads and finds the answers to questions. The problem to be investigated was the method to be used for indicating the answers. A preliminary test was constructed and applied to six boys each from Class X (age 16), IX (15), VIII (14), VII (13). The first Directions were "*Read silently and as quickly as you can, and find the answers to the questions. Stand up immediately you have finished. Pencils will then be given you, and the time taken by you will be marked on your paper.*" The disadvantage of the test in this form was that it involves an element of memory. This produces an impure score, for two boys may obtain the same score, the one having found all the answers but remembering only half, the other having found only half the answers but remembering all he found. Further it is possible that in the reading of a foreign language "immediate" memory presents a special difficulty.¹

In order to obviate the difficulties noted above, the idea of underlining was considered. If the boy were required to underline in the text the answers to the questions, there would be a check to detect those cases where the right answer was found but was not reproduced through failure of memory or expression. There was doubt however whether underlining might not be open to the same objection as writing, *viz.*, it might result in the inclusion in the reading-time of an undue proportion of time spent in pencil work.

¹ See Chapter 10 below, "The Size of the Unit." For Immediate Memory, see Glossary.

EXPERIMENT IN UNDERLINING.

In order to clear up this point an experiment was made with a set of six boys, using two stories of equal length and as nearly as possible of equal difficulty.¹ In the one case the boys were required to underline the answers and write them afterwards; in the other they were required merely to write the answers after completing the reading. In both cases the writing time is excluded from the time-score.

The results are shown below:—

With Underlining.				Without Underlining.		
(Ring in the Well)		% answers correct.		(Rosy Cheeks)		% answers correct.
Minutes.	Seconds.			Minutes.	Seconds.	
S. 1 . . . 4	35	28.5		6	5	25
2 . . . 4	35	57.1		5	5	83.3
3 . . . 6	25	42.8		6	35	50.
4 . . . 4	50	71.3		6	5	58.3
5 . . . 4	15	100.		2	35	66.3
6 . . . 4	35	100.		5	55	83.3
Mean Time . 4	53	66.6		5	23	61.0

TABLE 20.—The Effect of Underlining on the Rate of Reading.

It will be seen that there is, in the case of Underlining a superiority in Speed and in Comprehension. It appeared possible that this might be due to the fact that the underlining test was given first. The experiment therefore was repeated with a second set of boys, the order of the tests being reversed.

With Underlining.				Without Underlining.	
Ring in the well.				Rosy Cheeks.	
	Minutes.	Seconds.		Minutes.	Seconds.
S. 1 4		25		7	40
2 6		50		7	35
3 9		5		8	30
4 6		55		8	10
5 2		35		4	10
6 2		5		5	50
Mean time . . . 5		19		6	59
Mean percentage of correct answers 78.5				51.5	

TABLE 21.—The Effect of Underlining on the Rate of Reading. (Second Test).

¹ "Ring in the Well" and "Rosy Cheeks and her Sandal," Star of India Readers, Book III, page 20 and page 74.

The method of underlining yields results which show higher scores for rate of reading and for comprehension.

It seemed possibly however that the result might be due to a difference in the difficulty of the two passages; hence a third experiment was devised. Two sets of boys were selected of equal ability as measured by the English marks of the previous annual examination, and also of equal ability in the teacher's independent rating. Group I did Test A with underlining, and Test B without underlining; Group II did Test A without underlining and Test B with underlining. The without-underlining test was given first in both cases,

GROUP I. TEST A. WITH UNDERLINING.				GROUP II. TEST A. WITHOUT UNDERLINING.		
Student.	Time.	% correct answers.	Annual Examination Marks.	Time.	% correct answers.	Annual Examination Marks.
	Minutes. Seconds.			Minutes. Seconds.		
1. .	6 10	91.0	66	7 5	87.3	57
2. .	4 25	75.0	47	9 30	25.0	40
3. .	0 5	64.3	36	11 45	41.6	26
4. .	8 10	60.0	44	10 15	60.0	44
5. .	4 55	37.3	60	7 55	75.0	59
6. .	4 25	16.0	43	10 55	47.6	43
Mean time	6 12	64.1	48	9 24	55.5	44

Percentage of correct underlining, 83.7.

GROUP I. TEST B. WITHOUT UNDERLINING.			GROUP II. TEST B. WITH UNDERLINING.	
Student.	Time.	% correct answers.	Time.	% correct answers.
	Minutes. Seconds.		Minutes. Seconds.	
1	6 25	71.3	3 5	100
2	4 30	71.3	5 10	42.8
3	8 15	29.5	4 45	14.2
4	0 00	50.9	5 35	25.5
5	0 40	100	5 10	71.3
6	6 15	71.3	5 20	60.0
Mean . . .	7 21	60.6	4 51	52.3

Percentage of correct underlining 71.8

TABLE 22.—The Effect of Underlining on the Rate of Reading.
(Third Test).

Thus as regards Rate of reading, the results of—

Group I, Test A with underlining *are better than* the results of Group I, Test B without underlining.

Group I, Test A with underlining, than Group II, Test A without underlining.

Group II, Test B with underlining, than Group II, Test A without underlining.

Group II, Test B with underlining, than Group I, Test B without underlining.

As regards Comprehension, the results of—

Group I, Test A with underlining *are worse than* the results of Group I Test B without underlining.

Group I, Test A with underlining than Group II, Test A without underlining.

Group II, Test B with underlining than Group II, Test A without underlining.

Group II, Test B with underlining than Group I, Test B without underlining.

Comprehension in the case of the "With underlining" tests is here expressed in terms of the percentage of questions answered correctly after completion of the reading and underlining: this however is not identical as a measure with the percentage of correct underlinings.

Student.	GROUP I. Test A.		GROUP II. Test B.	
	%under- lining correct.	%answers correct.	%under- lining correct.	%answers correct.
1	91.6	91.6	100	100
2	91.6	75	56.9	42.8
3	66.6	65.3	56.9	14.2
4	91.6	50	71.3	28.3
5	66.6	33.3	71.3	71.3
6	91.6	16.6	71.3	56.9
Mean	83.3	51.1	71.3	52.3
Without underlining, per- centage of written answers correct, Test B.	66.6		55.5	Without underlining, percentage of written answers cor- rect Test A.

TABLE 23.—Written answers and Underlining as indications of Reading Comprehension.

Underlining, therefore, appears to produce an increase in the rate of reading, but a decrease in the percentage of questions answered correctly after the completion of the reading. On the other hand the percentage of correct underlinings is greater than the percentage of correct written answers, both in the case where underlining is used and where it is not used. The first phenomenon, gain in respect of rate of reading, may be attributed to the effect of underlining in encouraging effective skimming: the boy required to underline looks for the words to be underlined and passes rapidly over those not required, whereas in reading without underlining, he perhaps tends to read all the words and then search his mind for the idea required. This was very evident in an experiment made two years later. It was found that the pupils in one of the junior experimental classes could not read effectively in Bengali and were being retarded in English by this deficiency. Their defect was that they read the passage aloud and persistently neglected to look at the questions while reading. Moreover they stood up to indicate that they had finished (*viz.*, found all the answers) and then wrote all the answers wrong or even wrote nothing. Underlining was introduced in order to produce that searching attitude which is the essence of effective reading, and the remedy was almost instantaneous. It is interesting also to note that in classes where boys are being trained in high-speed reading with "Before Questions," underlining not being called for, there is yet always a strong tendency towards underlining: the boys make gestures of underlining with their fingers or with a pencil. This tendency is particularly marked in those boys who are more advanced.

In regard to the second point, namely the loss in respect of questions answered afterwards where underlining has been used, it may be supposed that the act of underlining tends in a small degree to take the place of an effort of memory when the correct answer is found. The discovered answer must be noted in some way: it may be noted by an effort of memory, by underlining, or by making a written record. Germane¹ finds that note-taking acts adversely on memory of a passage read, that two readings without note-taking produce greater retention than one reading with note-taking. Thus the note or underlining seems to take the place of a memory-effort. In neither case is it to be argued that note-taking and underlinings are ineffective, since the memory studied by Germane

¹ Germane, C. E., *Journal of Educational* . . .
pages 122-123.

is immediate memory, and all points remembered are marked as of equal value. The student by underlining or note-taking endeavours to ensure *remote* memory of those points which are of importance. The note or underline renders permanent the selection made in the first reading, and delays the memory-effort to a later date so that a memory impression of less depth and duration may be required.

As regards the immediate purpose, namely the construction of as "pure" a test as possible of reading ability, the above experiment indicated that the purity of the reading score would not be falsified by the inclusion of underlining,¹ and that underlining might possess the special advantage of tending to purify the type of reading, by encouraging a searching, instead of an Observational, attitude.

SELF-CORRECTION.

It has been argued above that, in order that a Reading Test may have any meaning, it is necessary to insist that all must reach an effective standard of comprehension in order to qualify for a score at all.

There are two possible methods of fixing such a standard.

1. We may make a list of the absolutely essential ideas only, and require 100 per cent. correct, or—

2. We may make a list of all the main ideas and require such a percentage of correct answers as will ensure a general comprehension of the theme.

In any cent per cent. requirement there is the difficulty that an actually efficient reader may, by a slip or omission which, taken alone, is not evidence of inefficient reading, be disqualified, and the results will thus be falsified by the rejection of a number of cases which should not properly be rejected: moreover if the class be warned that cent per cent. correctness is required, an excessively cautious attitude is produced which falsifies the time-scores.

As a possible solution of these difficulties the scheme was considered of handing back the papers after correction and adding on the time taken to rectify errors and omissions. This procedure would be justifiable only if the work on the second occasion were of the same nature as on the first. It appeared likely that the nature of the work might not be the same, in

¹ In girls' schools it is necessary to collect all rulers and India-rubbers before commencing a test, as girls tend to waste time in neat ruling. This does not occur in boys' schools.

as much as a fresh adjustment of attention is necessary, and, further, the previous error might tend to constitute an obstacle to correct response. A small scale experiment was made, and the results, shown below in Table 24 confirmed these objections.

GROUP AND TEST.	Box.	FIRST ATTEMPT.			SECOND ATTEMPT.		
		Time.		%correct answers.	Time.		%correct answers.
		Minutes.	Seconds.		Minutes.	Seconds.	
Group I. Test A.	1	6	10	91.6	4	10	100
	2	4	25	75.0	5	35	83.3
	3	9	50	58.3	7	20	66.6
	4	8	10	50.0	10	15	58.3
	5	4	55	33.3	11	15	91.6
	6	4	25	16.6	10	55	50.0
Mean	.	6	10	54.1	8	15	75.0
Group I. Test B.	1	6	25	71.3	11	15	71.3
	2	4	30	71.3	3	50	71.3
	3	8	15	28.5	7	40	48.8
	4	9	0	56.0	8	25	85.7
	5	0	40	100	..	..	100
	6	6	15	71.3	6	50	85.7
Mean	.	7	24	68.6	7	36	77.1
Group II. Test A.	1	3	50	100	..	..	100
	2	5	10	42.8	6	0	71.3
	3	4	45	14.2	7	15	28.5
	4	5	35	28.5	6	53	100
	5	5	10	71.3	3	50	85.7
	6	5	30	56.9	Absent.		..
Mean	.	5	0	52.8	5	55	77.1
Group II. Test B.	1	7	50	83.3	1	50	100
	2	9	30	25.0	9	55	41.6
	3	11	45	41.6	15	50	75.0
	4	10	15	66.6	9	20	75.0
	5	7	55	75.0	5	45	91.6
	6	10	55	41.6	Absent.		..
Mean	.	9	42	55.5	8	32	76.6

TABLE 24.—Self-correction as a method of equalising Comprehension.

It will be seen that in several cases the time of correction actually exceeded the time of the first attempt, and that cent. per cent. accuracy was not always reached. The results are obviously unsatisfactory.

The alternative remained of making a list of all the main ideas of the story and requiring such a percentage of correct answers as would be likely to ensure a general comprehension of the theme. This percentage must necessarily be fixed arbitrarily, and will vary somewhat with the nature of the material. With the very simple material which was finally selected the requirement of 75 per cent. correct answers was considered to be fully adequate.

The C. B. Test.

Name _____

Class _____

Do not turn over till the order is given.

Silent Reading Test—Part I.

This is a test to see how quickly and accurately you can read silently. In this story underline the words which give the answer to the question, and put the number of the question in the margin. Do not underline more words than you need, for that would count as a mistake. Work as fast as you can and stand up as soon as you have finished.

EXAMPLE.

(Questions.)

1. Why was the crow wandering hither and thither?
2. Where did he find the jug?
3. Why did he not drink the water at once?
4. How did he bring the water to the top of the jug?

Story—The Clever Crow.

- 1 One very hot day a crow got very thirsty. He wanted to find
water. He flew here and there, hither and thither, to and fro to find
water. But he could not see any water anywhere until at last he saw
2 a jug. The jug was in a garden. There was water at the bottom
of the jug. He wanted to drink it at once but he could not because
he could not reach it. The water was so low in the jug that he could
not reach it. So he thought for little, then he picked up a stone and
dropped it into the jug. He picked up another stone and dropped it
into the jug. In this way he brought the water up to the top of the
jug by dropping stones in the jug. So the crow drank.

Questions.

1. What did Chandra Bai look like?
2. What did Ratna Bai look like?
3. Why did the Bear want to come into the cottage ?
etc.
12. What did he take up from among the reeds?

CHANDRA BAI AND RATNA BAI.

(Two Woodland Sisters.)

Not far from a lonely wood stood a little cottage. In this cottage two little girls lived with their mother. All three were very happy.

The elder girl was very pretty. She looked like a white rose. So she was named Chandra Bai. Her sister looked like a crimson rose. And she was called Ratna Bai. The mother was only "Mother"; no one knew her by any other name.

One evening, the wind was blowing hard. It was very cold, etc.

THE TEST.

The story of "Chandra Bai and Ratna Bai" (Oxford University Press) was selected as being simple in vocabulary, Indian in ideas, and of the proper length. A sequel was added to the story. The original story was used as the material for Parts I and II of the test, the sequel formed Part III for After-Practice Measurements. Parts II and III are of exactly equal length. Part I is 24 words (or about 3 per cent.) shorter.

The test in its first form was printed and tried on about a hundred cases. It was then revised and reprinted. The directions were then further revised.

We have found it necessary in all test work with Bengalis to devote very great care and attention to the framing of the Directions. We are unable to offer any explanation of the fact, but we have found that Bengali boys and students appear to experience exceptionally great difficulty in following the directions of tests of all kinds, even when these directions are written in their own language. In all the tests which we have adapted from American or English originals for use with Bengali boys, we have been constrained to improve the directions,—in the Courtis Arithmetic Test by lengthening them, in the Monroe Kansas test by adding an extra example, in the Thorndike Intelligence Examination by using a staff of supervisors for the "Turn-over."¹ In an educational measure-

¹ See Glossary.

ment this point is of special importance, since if all are not made to understand the directions fully, these have an effect upon the marks by introducing a factor of General Intelligence into the scores. For this reason the present test has been made to consist of (1) Directions, (2) A short Practice Exercise, (3) Part I of the Test, (used, without the knowledge of the class, as a practice exercise), (4) Part II of the Test. The Part I's are corrected as they are handed in; errors are pointed out to the children, who then put them right. Part II is not given out till all the children have got Part I right. Part I is applied and marked exactly as if it were a real test, but actually no use is made of the scores. The Directions therefore have no influence whatever on the reading scores, since the explanation, followed by a short rehearsal followed by a full rehearsal disguised as a test ensures that every child has understood precisely what he has to do before he embarks upon Part II of the test, from which the actual scores are derived.

Advantages of the Test.

The special advantages of this test as compared with other tests of reading ability are:—

1. The Elimination of writing.—Apart from such faulty tests as the Kansas which include writing-time in the reading-time, there is always the disadvantage in writing that it is necessarily a measure of power of expression. The Completion Form does not evade this difficulty, for it rather introduces an added "impurity" viz., Reasoning.
2. The test holds constant more factors than other existing tests.—There is, above all, no "Intelligence" factor, since the test is preceded by a practice exercise, a complete rehearsal, correction, and setting right. It involves no puzzles or catches, and the children are not only informed of this, but are also shown that it is so by the Part I rehearsal. It demands almost no reasoning, and no previous knowledge. It is not a test of vocabulary save for beginners whose reading ability it does not pretend to be able to measure and for whom it would yield no score.
3. It contains no element of chance (such as exists in the Kansas test where one may give a correct answer without reading the text).

4. Cheating is impossible (whereas in those tests in which the child is relied on to record his own rate score it may very easily occur). Copying is almost impossible because of the very high speed of the test.
5. It is very easy to mark; as contrasted with the Brown-Test where a single paper may take five or ten minutes, or the Kansas type which takes about a minute per paper, this test can, by anyone who is used to it, be checked in a single glance. In fact with a class of 40 to 50 all the Part I papers are corrected by the Director of the test while the last few children are finishing.
6. It has no upper limit. The Kansas test fails to measure any child who completes the work in less than five minutes, and the higher grade versions of the Kansas type contain a large element of "Intelligence test." The present test has no limit since no one can reach Zero time. On the other hand it gives no fictitious bottom scores to persons who cannot really read at all.
7. Lastly this test has a high stimulus value.—In any test the result is fictitious if the persons tested are not induced to put forward their very best efforts. This may be especially the case with Bengali boys who are perhaps rather less responsive, rather less easy to get thoroughly roused, than others. The present test never fails to raise even the heaviest class to a state of excitement. There is a keen competition to better the previous score, besides the excitement of seeing the actual order and result immediately. The children enjoy the test; the scores therefore represent their maximum effort—as is evidenced by the high correlation between Part II and Part III.

The disadvantage of the Test is the to-and-fro movement of the eyes between the questions and the test. This might be overcome by having one question only involving many answers, *c.g.*, a Detective Story with the task of underlining all the Clues. It is doubtful whether a test of this kind could be made simple enough for use in a foreign language as in the present problem. It would be difficult also entirely to eliminate Intelligence and Reasoning. An attempt on these lines might, however, be made in reference to the mother-tongue.

Procedure.

To test a large class it is necessary to have one Director, one Supervisor for each 25 children, and one Time-keeper (or Timing-machine).

Arrangement:—The children must be fairly liberally spaced as the paper opens rather widely. There must be gangways so that every child can be rapidly reached without disturbing any other child in so doing. The various supervisors are allotted definite portions of the class-room. The black-board must be visible to all supervisors.

The procedure is reported below in the actual words used with English-speaking children. In testing Bengali children the same form was used translated into Bengali.

“Has any one got a piece of India rubber or a ruler?” (Those children who have, thereupon produce them). “You won’t want them” (The supervisors take away all rubbers and rulers. This is to prevent loss of time in ruling or rubbing out).

“Has every one got a pencil?” (Defects are supplied from the stock). “If your pencil breaks, hold up your hand and I will give you another.”

“Now don’t touch these papers. Don’t open them. Just let them lie on the desk.” (Part I is distributed by the supervisors. The director stands and watches to prevent any boy opening his paper.)

“Now write your name and class here; and then put your pencil down.”

“Now look at the directions, here—” (pointing to the English. The director reads the English: the words “how quickly” are said twice and with emphasis to drive home the idea of speed).

“Now read the Bengali for yourselves.” (Pause: the director times this pause by silently reading over the directions once, word for word, slowly).

“Now here is an example. Here are the questions and here is the story. Now look at the first questions, “Why was the crow wandering hither and thither?” Now look at the story to find the answer;” (reads) “One day a crow But he could not.” Why was the crow wandering hither and thither?” (Class supplies the answer). “It is underlined.

Underline it again and put another 1 in the margin to show that you understand." (Vigorously underlines and puts 1 on his own paper. Class imitates. Then the same procedure is followed with Question 2).

"Now Question 3 "Why did he not drink the water at once?" and Question 4 "How did he bring the water to the top of the jug?" Find the answers to these yourselves, underline them, and put 3 and 4 in the margin. Stand up as soon as you have finished, to show that you understand about standing up. There is no need to turn over. The answers are here" (pointing to bottom of page 1).

When a boy stands, the supervisor, if the answers are right, says "All right; sit down;" if the answers are wrong, the supervisor assists him. At this point the following faults are checked:—excessive and too careful underlining, omission of numbers, bracketed numbers.

Director: "Now listen. You see the questions come 1, 2, 3, 4, and the answers are in the same order, 1, 2, 3, 4. There are twelve questions inside 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, and the answers come in the same order, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12. They are very easy: there is no catch; so you ought to be able to get them all right. Your score is the time: the shorter the time the better the score, as in a race. So work quickly, and stand up immediately you have finished."

"Now ready:—Remember to stand up immediately you have finished. Ready Ready Begin" (on the word "Begin" the director opens his own paper noisily).

Supervision of the Beginning of Part 1.

The supervisors first see that the papers are opened fully and are not turned back; they then look for children writing the answers instead of underlining, for excessively careful underlining or too carefully written numbers, excessive underlining, brackets round numbers, Roman figures, numbers not in the margin. As the marks for this test do not actually count for the final score, a brief interruption of the child does not matter, though as little help as possible should be given. The corrections for the above faults are stereotyped three-or-four-word orders, *e.g.*, "Don't write: underline" (and cancel the writing) "Don't bracket: it wastes time," "Ordinary figures."

Supervision at the End of Part I.

When a boy stands, the Time-keeper writes up the time, or points to it is already written: the supervisor writes the time on the paper and collects it.

Papers are not accepted unless the last answer is done and $\frac{7}{8}$ of the answers in all are correct. This can be seen at a glance by the supervisors. The papers are checked again by the director of the test, and faulty papers are handed back by him, while the remaining pupils are finishing. The very slow pupils (after the expiry of 100 time units) are helped by the supervisors.

The Start of Part II.

Director:—"Some of you did not understand that time. So I won't count that; I will give you another chance. Now this is the real thing. Don't touch the papers; let them lie on the desk Now write your name and class and then put your pencil down Now one thing before we start—The answers come in the same order as the questions. They are very easy. So you ought to be able to get them all right. There is but one catch—what was the number of the last answer in Part I?" (Class answers "Twelve") "What will be the number of the first answer in Part II?" (Class answers "Thirteen"). "Yes Thirteen, so do not go and put "One." Thirteen is the first number. Your score is the time, the shorter the time, the better the score, as in a race. So work quickly and stand up immediately you have finished. Try to do better than last time. Now, Ready, Ready Begin!"

No help is given during the progress of this part of the test, except to correct any child who writes 1 instead of 13.

The Conduct of Part III.

Part III has not been standardised for Indian boys. Its correlation with Part II was established by applying it to Anglo-Indian girls. It is used as an After Test for Practice classes. It might also be used for obtaining a Mean Score (Mean of Part II and Part III, which would be a more reliable figure than the score of Part II or Part III separately).

In applying it as an After-test it is always preceded by Part I or Part II as a reminder. In using it for a mean score, it immediately follows Part II and is introduced by the words "We will give you just one more chance to see if you can beat your previous score."

The Marking of the Test.

The score of each child is the time taken by him in units of five seconds. This, by a simple computation¹

$\frac{(0.750)}{\text{Number of time units}}$ yields reading rate in terms of words per minute. Decimal time-scoring, in units of six seconds would be convenient at this point as well as in the class-timing when there is no machine.²

Rejections.

It will be recollected that 75 per cent. of correct answers was fixed as the standard of Effective Reading, and that test papers which showed a lower standard of accuracy were to be rejected. The effect of this principle is shown below:—

Percentage of answers correct.	100	92	83	75	67	58	Below 58.	Below 75. Rejections	Total cases.
Intermediate—									
2nd year . . .	59.6	17.4	17.2	2.6	0.8	0.8	1.0	3.2	379
1st year. . .	71.4	20.1	0	1.8	0.4	0.2	0.2	0.7	548
Class X . . .	67.6	26.0	8.5	2.0	1.5	1.6	2.3	5.4	388
„ IX . . .	51.5	20.8	8.7	0.5	2.8	1.7	5.1	0.3	356
„ VIII . . .	40.8	21.8	11.4	7.4	0.6	4.5	7.4	18.6	377

TABLE 25.—Percentage of boys who obtained various percentages of correct answers in the C. B. II (Chandra Bai, Part II) English Reading Test, Bengali boys.

Table 25 is to be read as follows:—Of Intermediate Second Year pupils tested (total cases tested, 379) 59.6 per cent. obtained 100 per cent. correct answers; 17.4 per cent. obtained, 92 per cent. correct answers, etc.

	% Rejected.	Total number of cases.
M.A.	8.3	30
B.A.	1.5	66
Inter., 2nd	3.2	379
„ 1st	0.7	548
Class X	5.4	388
„ IX	9.5	356
„ VIII	18.6	377

TABLE 26.—Percentage of Rejections in C. B. II (Chandra Bai, Part II) English Reading Test, Bengali boys and students at various stages. (*For explanation of table see over.*—)

¹ There are 813 words in the story.

² See Appendix I to Chapter 7.

(The table is to be read as follows:—36 students in the M.A. class of the University were tested, and the test papers of 8·3 per cent. of these had to be rejected, because they did not contain the necessary number of correct answers to comply with the conditions of the test.)

It will be seen that the Chandra Bai test works efficiently in and above the Matriculation Class (Class X): in Class VIII the rejections are heavy.

In the case of Anglo-Indian girls the rejections are very few; but for children under the age of 9 or 10 the test takes rather a long time.

Age (In years and decimals).	Rejected.	Total number of cases.
7·6—8·5	12·5	8
8·6—10·5	nil.	81
10·6—11·5	1·0	99
11·6—12·5	2·7	146
12·6—13·5	3·0	193
13·6—14·5	2·1	142
14·6—and over	nil.	315
	TOTAL	956

TABLE 27.—Percentage of Rejections in C.B. II (Chandra Bai, Part II) English Reading Test, Anglo-Indian girls, at various ages.

The results of the test applied to Bengali boys are shown below:—

Class.	Median Score in time-units.	Converted into words read per minute.	Standard deviation.	Number of cases.
M.A.	52·3	186·5	18·0	33
B.A.	67·4	144·8	18·9	65
Intermediate—				
2nd year	78·3	124·6	23·5	367
1st Year	84·1	116·0	26·1	544
Class X	107·9	90·4	42·1	367
" IX	121·3	80·4	39·5	392
" VIII	136·8	71·3	48·7	307
			TOTAL	2,005

TABLE 28.—The Results of C. B. II (Chandra Bai, Part II) English Reading Test applied to Bengali boys and students at Dacca.

It is not possible to obtain age-norms of Bengali boys because the true ages cannot be discovered. Owing to the age limitations of the Calcutta Matriculation and of entrance into Government service, and to the custom of recording age by means of a horoscope, falsification of age—or carelessness in the matter—is very common; and the true ages, even where known, are not revealed, save orally and after much persuasion.¹

The High English schools of Dacca vary widely in respect of actual efficiency, and in respect of the social status of the boys attending them. Dividing the schools into three groups A, B and C according to their local reputation, we obtain the following results:—

—	A Schools.	B Schools.	C Schools.
Median Time Units .	84.7	111.3	125.5
Words per Minute read in the C. B. test.	115.2	87.7	77.7
Number of cases .	120	103	114
			} Class X.
Median Time Units .	97.6	136.0	136.1
Words per Minute read	100.0	71.7	71.7
Number of cases .	115	116	91
			} Class IX.
Median Time Units .	114.1	150.8	173.3
Words per Minute read	85.5	64.7	56.3
Number of cases .	123	106	78
			} Class VIII.

TABLE 29.—The Effect of Quality of School on Speed of English Reading.

The tests of Indian boys in Dacca included all High English school and Intermediate College students in Dacca². Owing to the difficulties of University routine it was not possible to obtain more than a small group of B.A. and M.A. class students.

¹ For examples, see Tables 90 and 91.

² Except Practising School Classes VIII and IX to which the rejected form of the test had been applied.

In order to obtain comparative standards from children whose mother-tongue is English a test was made of 956 Anglo-Indian girls in Calcutta. A selection of typical schools was made by the Inspector of European Schools so as to include approximately proportionate numbers of pupils of good, medium and inferior schools: practically all the schools in central Calcutta were tested, and some on the outskirts.

The results are shown below:—

Age.	Median score in time-units.	Median Time converted to words read per minute.	Standard Deviation.	Number of cases.
7-6—8-5 . . .	161-0	53-0	40-2	7
8-6—9-5 . . .	98-5	99-0	45-6	23
9-6—10-5 . . .	101-0	96-6	35-6	58
10-6—11-5 . . .	88-0	110-0	41-1	98
11-6—12-5 . . .	83-1	117-4	36-6	142
12-6—13-5 . . .	74-2	131-5	48-0	160
13-6—14-5 . . .	61-0	152-4	32-4	139
14-6—15-5 . . .	53-4	162-7	25-6	139
15-6—16-5 . . .	51-7	188-7	24-5	64
16-6—17-5 . . .	51-0	191-3	24-2	38
17-6—18-5 . . .	41-7	234-0	9-5	16
18-6—19-5 . . .	42-7	228-5	21-1	8
			TOTAL .	912

TABLE 30.—The Results of C.B. II English Reading Test applied to Anglo-Indian girls, Calcutta.

Mr. Karim Ahmed Khan Lodhi applied the C.B. II test to 1602 cases in the English School system of His Royal Highness the Nizam's Dominion.

His results are shown below :—

Class.	Actual age.	Median Score in time-units.	Number of cases.
III	15-1	123-7	635
IV	15-11	99-9	255
V	16-10	76-0	261
VI	18-4	72-4	288
1st year . . . .	..	52-7	72
2nd year . . . .	..	46-3	52
B.A. . . . .	..	46-1	39
		TOTAL .	1,602

TABLE 31.—The Results of C.B. II English Reading Test applied to males in the English school system in His Royal Highness the Nizam's Dominion.

We may compare these results and those obtained in the case of Anglo-Indian girls with the scores of Bengali Boys.

BENGALI MALES.		ANGLO-INDIAN GIRLS.		HYDERABAD MALES.	
Class.	Median score in time-units.	Age.	Median score in time-units.	Class.	Median score in time-units.
....	..	19	42-7	B.A., .	46-1
				2nd year .	40-3
M.A.	52-3	18	51-7	1st Year .	52-7
B.A.	67-4	14	64-0	..	..
	..	..	..	VI . . .	72-4
Intermediate— 2nd Year . .	78-3	13	74-2	V . . .	76-0
1st year . . .	84-1	12	83-1	..	..
Class X . . .	107-9	10	101-0	IV . . .	99-9
„ IX	121-3	..	..	III . . .	123-7
„ VIII . . .	136-8	..	..	..	..

TABLE 32.—Anglo-Indian girls, Bengali males and Hyderabad males compared in respect of C. B. II English Reading Test.

This may be converted into a table of age equivalencies, remembering that the Bengali ages are the nominal ages of the classes, derived from the fact that a child aged less than 16 years was at that time not eligible to sit for the Matriculation Examination. The ages of Anglo-Indian girls and Hyderabad students are actuals.

Bengali age (Class nominal age).	Hyderabad age(actual)	Anglo-Indian girls age (actual)
21	19.4	16
19 . . . . .	....	14
18	16.10	13
17 . . . . .	....	12
16	15.11	10
15	15.1	....
14 . . . . .	....	....

TABLE 33.—Approximate Age equivalencies,—Bengali males, Hyderabad males and Anglo-Indian girls—in respect of C.B. II English Reading Test—(cases 4,519).

THE RESULTS OF C.B. III.

C.B. III test was applied to Anglo-Indian girls in order to determine the reliability of this type of test. Pearson r^1 is 0.85; P. E. .0081; cases 538.

Age.	Median score in time-units.	Converted to words read per minute.	Standard Deviation.	Number of cases.
9.6—10.5 . . .	63.5	153.6	15.9	11
10.6—11.5 . . .	61.0	159.9	19.1	21
11.6—12.5 . . .	62.1	157.1	22.5	63
12.6—13.5 . . .	60.6	161.0	23.7	111
13.6—14.5 . . .	55.8	174.8	23.5	99
14.6—15.5 . . .	47.9	203.7	18.4	116
15.6—16.5 . . .	50.2	194.3	21.4	71
16.6—17.5 . . .	49.8	195.9	22.2	38
17.6—18.5 . . .	41.8	233.4	9.8	11
18.6—19.5 . . .	33.5	291.2	24.2	5

TABLE 34.—The Results of C.B. III English Reading Test applied to Anglo-Indian girls, Calcutta².

¹ "r" stands for the coefficient of correlation calculated by the Product-moment formula. Rugg, H. O., Statistical Methods applied to Education, 1917, page 251; or (more fully), Brown, W. and Thomson, G. H., Essentials of Mental Measurement, 1921, Chs. V-VI. See "r" and "correlation" in the Glossary; also P. E. in the Glossary.

² The superiority in the scores, especially in the lower ages, in C. B. III, is due to the fact that only the upper classes were given C. B. III, hence the younger children tend to be a selected group, whereas C. B. II was applied to all children of the age.

THE MONROE KANSAS TEST¹.

The Kansas is a very widely used reading test; it has many faults, but it has the advantage that it yields some score where tests of the continuous type (such as those of Brown and Stone and the C.B. test) yield none.

This test was adapted to Indian conditions; in so doing only the most obviously necessary changes were made.

The alterations made in Form II are given below as an indication of the nature of the changes required:—

Kansas I, Form II.—Alterations in adapting Monroe's "Kansas" English Reading test to Bengali boys.

No.

- | | |
|---------------------------------|--|
| 1. (Farmyard) | yard. |
| (Wheat) | rice. |
| (Chicken-house) | cow-shed. |
| (feed-bin) | store-house. |
| 2. (So many good times) | such a good time. |
| 3. Nil. | |
| 4. (Rooster) | Cock. |
| 5. (Ruth) | Ram. |
| (Frank) | Shyam. |
| 6. (Tablet) | Khata. |
| (eraser) | rubber. |
| 7. Nil. | |
| 8. (Goslings) | geese. |
| 9. (Buggy) | carriage. |
| 10. (The Golden rod is yellow. | The Golden Mohur is crimson. |
| The corn is turning brown. | The rice fields all are brown. |
| The trees in the apple orchards | The mango trees in the garden. |
| With fruit are bending down). | With fruit are bending down. |
| Autumn, Spring, Winter, Summer. | The Cold Weather, The Hot Weather, The Monsoon, The Pujas. |
| 11, 12, 13. Nil. | |

¹ The test referred to is Monroe's revision (or rather recasting) of the Kansas, or, by its full title "Monroe's standardized general survey Silent Reading Test."

14. On the ground the apples lie. On the ground jute fibres lie.
 In piles like jewels shining. In piles like silver shining.
 And redder still on old stone walls. And whiter still on the garden walls.
 Are leaves of woodbine twining. Are flowers of Kunja lata twining.
 Spring, Summer, Fall, Winter. Hot Weather, Monsoon, Cold Weather.
15. If we had no more birds in the summer. If we had no birds in India.

As regards form the test used was a facsimile of the original even down to the publisher's marks.

The first edition printed was rejected because it was found that the somewhat verbose instructions and single example were insufficient in view of the Bengali boy's special disability in this respect. The test was reprinted with two examples on the first page, the second example having been taken from another form of the same test.

Two forms, *viz.* (Test I, Form 1 and Test I, Form 2) were prepared, both being adapted from the corresponding American versions, in order that test might be used as a "Before Test" and "After Test" for practice classes.

THE RELATIONSHIP OF KANSAS AND C.B. II.

A very close relationship between Monroe Kansas and C.B. II is not to be expected as the tests are of different types, and, in our opinion, the Kansas does not measure a pure function.

Class.	r (Pearson).	P. E.	Number of cases.
Intermediate—			
2nd Year . . .	.62	.0216	367
1st Year . . .	.56	.0198	544
X . . . .	.62	.0217	367
IX . . . .	.52	.0277	318
VIII . . . .	.64	.0228	304

TABLE 35.—The relationship of C.B. II and Kansas English Reading Tests at various stages, Bengali boys.

THE RESULT OF THE KANSAS TEST.

The results of the Kansas Test Form I with Indian boys are shown below: the nearest equivalent American norms are shown for comparison¹. Kansas Form I is intended for Grades III, IV, V, in American schools.

Class.	BENGALI BOYS.		Number of cases.	NEAREST EQUIVALENT AMERICAN NORM.			
	Median of State Scores.	Median of comprehension scores.		State score.	Comprehension score.	Grade.	Age (in years and months).
Intermediate—2nd Year (age 18).	76.3	12.8	379	80	14.5	IV End Year.	11-2
Intermediate—1st Year (age 17).	69.3	12.1	518	73	13	IV Mid. year.	10-8
Class X. (age 16).	57.4	8.6	382	60	9	III End Year	10-2
Class IX. (age 15).	45.5	6.4	355	52	7.2	III Mid. year.	9-7
Class VIII.	42.0	5.0	386	..	..	..	..

TABLE 36.—The comparative norms,—Bengali and American grades compared—in Monroe Kansas English Reading Test, Form I.

It will be observed that the Kansas test yields a lower age equivalency for the two Intermediate College classes than does the C.B., but that in the Matriculation class (Class X) the two tests yield a practically identical result, namely that the boys of the Matriculation class in Bengal are in respect of reading ability in English equivalent to children whose mother-tongue is English at the age of ten years. The Kansas test supplies an age equivalency for Class IX (namely English age 9½) whereas the scores of the C.B. test of Anglo-Indian girls at the

¹ Age—derived from McCall, W., *How to measure in Education*, 1922, page 34.

Brinkley, S. G., "American Tests to measure English Teaching in China," *Journal of Educational Research*, VIII/2, September 1923, makes a comparison of Chinese and American boys, but neither his tests nor results are amenable to comparison with these. (He uses Thorndike-McCall, and Trabue Language Scale and compares years of study, not age). Tu, H. T. C., *Journal of Educational Research*, IX/2, February 1924, compares the Chinese Reading Ability of Chinese children with the English Reading Ability of American Children by means of the Monroe Kansas Test, and finds the Chinese children retarded by three years in the Rate scores. The retardation is obviously much greater in the Comprehension scores, but the Chinese tests have not been carried high enough to touch the lowest American norm.

point required are untrustworthy owing to insufficiency of cases.

THE NEED FOR OTHER TESTS.

It has been suggested in the previous discussion that there are two fundamentally different types of response to a reading-situation both loosely called Reading—namely, (1) Reading in which the child in an Observational attitude plods through the matter observing every word, and, (2) “Scanning” or Skimming, in which the child definitely searches for some particular item or items in the text. The Searching attitude is a more strained attitude than the Observational. Most people respond sometimes with the one type of reading, sometimes with the other, according to the nature of the situation and according to their ability in scanning; but we have maintained that the Searching type of reaction is the more common and more useful response.

These two types of response will more or less coincide in a situation in which the child is required to extract from the matter presented a very large proportion of the total ideas; for the child who reads “observationally” will read every word, and the child who searches will be compelled to read almost every word. It follows that a test to which it is possible to react equally well by Observational Reading or by Searching will make less discrimination between the skilled and the unskilled reader than one to which it is possible to react effectively by Searching only. The latter type of test has however a somewhat narrow field since all who are not skilled readers are likely to fail entirely to cope with it.

On the other hand a test which can be almost equally well dealt with by the observational method of reading or by searching will not indicate efficiently the amount of improvement in a practised as compared with an unpractised class or individual. The “Question-density” (that is, the number of questions per thousand words) of the C.B. test is 14·8, and the highest reading rate shown by it is 291·2 words per minute (see Table 34), whereas in the experimental classes a rate of 1266¹ words per minute has been observed. The C.B. test shows an improvement in the practised pupils of the first experimental group² of 58·2 per cent., whereas the records of

¹ See Table 49.

² See Table 51.

the class work show improvements in the same experimental group ranging from 479 per cent. to 32 per cent.¹

In order to arrive at a better estimate in the test results of the amount of improvement in the practised classes a pair of tests² was devised in which the question-density was 2·7 (questions per thousand words). The Directions are shown below:—

DO NOT TURN OVER THE BOOK YET.

There are four questions. When I say "Go," turn over the book and find the answers to the questions as quickly as you possibly can. Just get the answers to the questions. Do not bother about anything else. Then stand up. I shall take away the book and you will write the answers.

Do not write before you stand up.

Ready—————Ready—————Go.

The passage ends some distance after the words which constitute the answer to the last question, but the word-count is made only as far as the last answer.

This pair of tests shows an improvement of 201·9 per cent. in the Third Experimental Class where C.B. II C.B. III records only 79·3 per cent.³ and yields a rate of reading of about five hundred words per minute, a rate twice as great as that recorded by the C.B. end test.

Test.	Number of words in the story.	Number of questions	Question-density (Questions per 1,000 words).	Number of words in the story plus the questions.	Question-density (Questions per 1,000 words).
C. B. I.	600	12	18·0	780	15·2
C. B. II	600	12	17·2	813	14·8
C. B. III	681	12	17·6	813	14·8
Blue Lamp	1,339	10	7·5	X*	..
Four Brothers	1,339	10	7·5	X*	..
Little Brother	1,455	4	2·7	1,491	2·7
Beauty and Beast	1,449	4	2·8	1,490	2·7
Kansas I	533	16	30·0	734	21·8
Kansas II	471	15	31·8	663	22·6
Blue Lamp. (Before questions) .	1,244	5	4·0	1,300	3·8

TABLE 37.—The Question-density in various English Reading-tests used.

¹ See Table 48.

² "Beauty and the Beast" and "Little Brother and Sister."

³ See Table 53.

* In these tests the questions are given after completion of the reading time, and are therefore not included in the word-count.

The comparative rates of reading given in the table below¹ are interesting but have little definite meaning without information as to the nature of the reading situation in each case.

Investigator.	Grade. 1.	2.	3.	4.	5.	6.	7.	8.	College Stu- dents.	Reference.
Starch school. ²) "a certain	96	126	156	240	318	252	264	330	..	1
Fordyce	209	272	250	276	250	..	2
Courtis (Normal Read- ing).	156	180	222	252	258	318	..	3
Waldo (after practice)	140	163	129	130	143	159	..	4
Oberholtzer	138	156	186	234	282	288	..	5
O'Brien (after practice)	231	220	270	288	315	435	..	6
Starch (Test Norms) .	00	108	126	144	168	192	216	240	..	7
Brown	109	213	260	272	270	200	..	8
Gray	00	138	132	154	167	161	172	..	9
Courtis (Gary Survey) .	..	54	108	140	166	185	198	204	..	10
Quantz (highest ordinary)	528	11
Huey (Do.)	588	12
Huey (highest)	810	13
Stone	218	245	..	..	14

TABLE 38.—Rate of Reading (words per minute) as shown by various investigators.

They represent in most cases, save where otherwise indicated, (*e.g.*, No. 13) merely the rate of reading when no information is given as to the nature of the after-test, in some cases the habitual rate, in some cases (the idea of speed being predominant) the maximum rate, in some cases (the idea of accuracy dominating) a minimum rate. The variation in the norms is therefore considerable. These norms cannot be compared with each other for there can be no direct comparison

¹ Starch, D., *Educational Psychology*, 1919, page 280.

² *Ibid.*

³ Smith, W., *Reading Process*, 1922, page 158.

⁴ Starch, D., *op. cit.*, page 283.

⁵ *Ibid.*, page 287.

⁶ O'Brien, H., *Silent Reading*, 1921, page 222.

⁷ Starch, D., *op. cit.*, page 275.

⁸ Brown, H., *Measurement of Ability to Read*, 1916, page 57.

⁹ Monroe, W. S., Devoss, J. C. and Kelly, F. J., *Educational Tests and Measurements*, 1917, page 79.

¹⁰ Courtis, S. A., *The Gary Public Schools*, 1919, page 276.

¹¹ }
¹² } Huey, E., *Psychology and Pedagogy of Reading*, 1910, page 172-5.
¹³ }

¹⁴ Stone, C. and Murphey, L., *Narrative Reading Tests, Directions*.

between the raw rate scores of a test in which the question-density is 20 questions per thousand words and those of a test in which the question-density is 10 or 5. Even were the question-density the same, most of the tests do not inform the child of the nature of the reproduction required, and there can be no comparison between the score of a child who reads with a view to reproducing 40 per cent., *viz.*, bare essentials only, and one who aims at reproducing 100 per cent.

EXPERIMENT ON THE EFFECT OF VARIATION OF QUESTION-DENSITY ON RATE OF READING.

If the increase of speed due to decrease of question-density is an increase of speed in the same mental function it will however be possible at least approximately to convert the rate at one density into an equivalent for another density and so make various reading tests comparable¹. Partly with this purpose, and partly with a view to obtaining more information on this subject, an experiment² was undertaken on the following lines:—

In the first place, in order to discover the amount of difference in "Rate norms" caused by decrease of question-density with a large unpractised group, a test (Blue Lamp) was devised, having the same vocabulary-difficulty as C.B. II but with one quarter of the Density. The ratios are (B.L. : C.B.), Length 1·6 : 1, Density 0·26 : 1, Rate 1·7 : 1.

Test.	Length of Test, words.	Number of questions.	Question-density, (questions per 1,000 words).	Rate (Words per minute).
C. B. II . . .	813	12	14·8	124·7
Blue Lamp . . .	1,300	5	3·8	215·5
Number of Cases 402				

TABLE 39.—Reading Rate in relation to Question-density—
Second Year Intermediate College Students.

¹ This has been attempted by Gates in regard to Handwriting Quality,—Gates, A. I., *Journal of Educational Psychology*, XV/3, March 1924, and by Courtis, S. A., *The Relation between Rate and Quality in Educational Measurement*, *Journal of Educational Research*, X/2, Sept. 1924. Courtis refers to the problem in regard to reading but fails to observe the point noted here, that high-speed and low-speed reading are different functions.

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2. Secondly it was proposed, with a small group trained to the point where further improvement did not occur, to observe the relationship between Rate and Question-density.

Twenty-five students (Intermediate First Year) were selected and were given a preliminary test¹.

Section.	Length of Section, Words.	Questions.	Question-density.	Rate (words per minute).
1	100	3	30.0	315
2	150	3	20.0	276
3	300	3	10.0	365
4	600	3	5.0	492
5	1,200	3	2.5	361
6	2,400	3	1.25	403

TABLE 40.—Reading Rate in relation to Question-density in the Practice Group; Before practice.

It will be seen² that there is no regularity in this result. The class was given twenty practice lessons using other books of the same series.

They were then tested again (using books of the same series). In the first three tests the work was divided between two days (as the test is rather a long one). The fourth test was completed in the one period of about 90 minutes.

Length of Section, Words.	Question-density.	Mean Rate, w. p. m. Test 1.	Mean Rate, w. p. m. Test 2.	Mean Rate, w. p. m. Test 3.	Mean Rate, w. p. m. Test 4.	Test 4, twelve to most reliable students ³ Rate, w. p. m.
100	30.0	315	317	290	250	201
150	20.0	276	281	204	244	274
300	10.0	365	364	333	332	349
600	5.0	492	333	504	410	442
1,200	2.5	361	486	370	423	411
2,400	1.25	403	603	477	577	515

TABLE 41.—Reading Rate in relation to Question-density in the Practice Group; After practice.

¹ The book was the Pansy Story Book (E. Arnold).

² See Graphs 2 to 5.

³ Viz., those who were most keen on the work during the whole period.

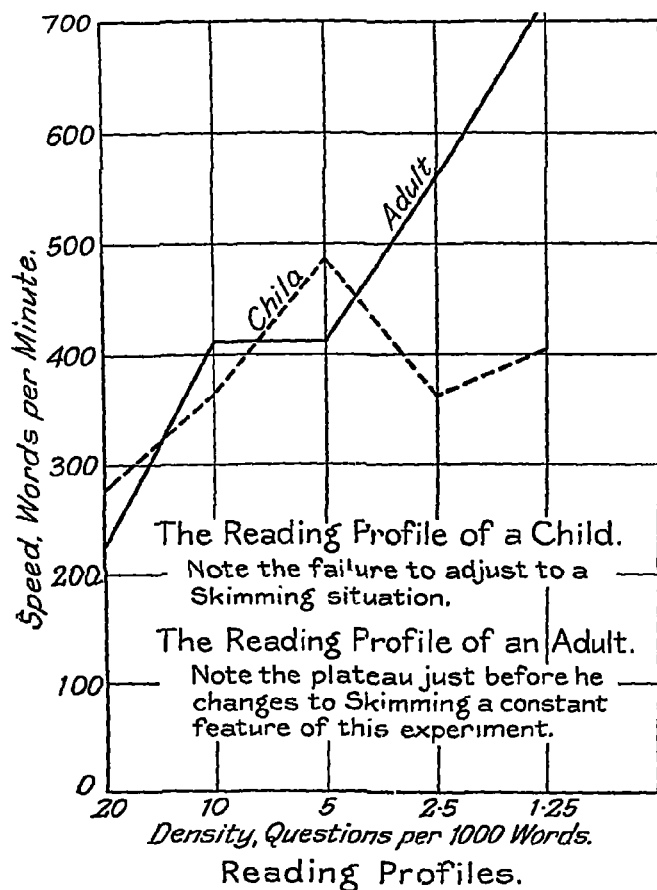


DIAGRAM 7.

This result is considerably more regular than that of the preliminary test. Tests 2, 4 and the selected group in test 4 show a close resemblance in the type of curve¹. There is a steady increase in each case save for a definite plateau at the speed of 350—450 words per minute.

The test was repeated with a class of twenty-four adult teachers in training. One period (45 minutes) was devoted to a preliminary practice, sections of about 300 words being used with three questions per section: this preliminary period was intended to accustom the students to the procedure. On the following day the test itself was given using material different from that used on the first day but taken from the same series of books.

Length of Section, Words						Question-density.	Rate (words per minute).
100	.	.	.	.	.	30.0	237
150	.	.	.	.	.	20.0	220
300	.	.	.	.	.	10.0	413
600	.	.	.	.	.	5.0	413
1,200	.	.	.	.	.	2.5	551
2,400	.	.	.	.	.	1.25	728

TABLE 42.—Reading Rate in relation to Question-density with adult teachers in training. First Test.

It will be seen that practice in the first case (Intermediate Students) had the effect of producing greater regularity, that the adults without practice are more regular than the juniors, but they show a similar "Plateau." The close resemblance in the shape of the two graphs appeared interesting. In order to verify the point the test was repeated using two different classes of Bengali teachers in training, and using three different books. The plateau is persistent and very marked in both the easier books (the Lotus and the Marigold Story books); it is observable, but in a less marked manner, when Conan Doyle's "Lost World" was used. This last is a much more difficult book, and hence the speed of reading tends to be affected by difficulties of comprehension.

Comparing individual cases a curious "Reading Profile" was observed, *viz.*, in each of the three experiments the graph

¹ See Graphs 2 to 5.

of the individual tended to approximate to a characteristic shape.

This plateau appears therefore to be a definite phenomenon, and might perhaps be interpreted somewhat as follows:—that the reader as long as possible pursues the more comfortable method of reading the passage right through; he is able to do this at a density of ten questions per thousand words when he is reading at his maximum¹ speed or almost his maximum. At five questions per thousand words he still tries to read through, but cannot increase his speed—or can increase it but very little. At 2.5 question per thousand words the nature of the reading situation obviously calls for a Searching type of response, so he changes his method and embarks upon a new rate of increase. In the case of the younger (Intermediate College) students the change to the searching response takes place at a lower density, 1.25.

No. of Section.	Length of Section, Words	Question-density.	The Lotus Story book (Group A 24 cases) Rate, words per minute.	The Marigold story book Group A (24 cases) Rate, words per minute.	The Lost World Group A (21 cases) Rate, words per minute.
(1) . .	100	30.0	257	250	88
(2) . .	150	20.0	220	166	182
(3) . .	300	10.0	413	427	254
(4) . .	600	5.0	413	332	292
(5) . .	1,200	2.5	551	194	357
(6) . .	2,400	1.25	728	610	409

TABLE 43.—Reading Rate in relation to Question-density, adult teachers in training (First, Second, and Third test).

No. of Section.	Length of Section, Words	Question-density.	Lotus, (24 cases).	Marigold (24 cases) Rate, words per minute.	Lost World (21 cases) Rate, words per minute.
(1) . .	100	30.0	87	97	87
(2) . .	150	20.0	91	87	81
(3) . .	300	10.0	91	88	78
(4) . .	600	5.0	95	76	66
(5) . .	1,200	2.5	95	64	63
(6) . .	2,400	1.25	72	82	68

TABLE 44.—Accuracy in relation to Question-density, adult teachers in training.

¹ It will be noticed that in every case, except that of the *Lost World*, the plateau occurs just as a rate of about 400 words per minute is reached, viz., the highest possible rate of oral word by word reading.

No. of Section.	Length of Section, Words.	Question-density.	Rate, words per minute.	Accuracy.
				Per cent.
(1) . .	100	30.0	68	72
(2) . .	150	20.0	147	77
(3) . .	300	10.0	216	77
(4) . .	600	5.0	235	54
(5) . .	1,200	2.5	297	62
(6) . .	2,400	1.25	418	61

TABLE 45.—Reading Rate and Accuracy in relation to Question-density, Difficult material, adult teachers in training (Group B).

No. of Section.	Length of Section, Words.	Question-density.	Rate, words per minute.	Accuracy.
				Per cent.
(1) . .	100	30.0	78	80
(2) . .	150	20.0	163	79
(3) . .	300	10.0	234	78
(4) . .	600	5.0	263	60
(5) . .	1,200	2.5	326	62
(6) . .	2,400	1.25	456	63

TABLE 46.—Reading Rate and Accuracy in relation to Question-density, Difficult material, adult teachers in training (Groups A and B). 43 cases.

BEFORE-QUESTIONS AND AFTER-QUESTIONS.

The C.B. test uses Before-questions entirely. The Kansas Test is of such a nature that the reader can use the questions either as Before-questions or as After-questions.

The advantages of Before-questions in a test are that:—

1. They eliminate the factor of Memory, for the response can be given immediately.
2. They eliminate Power of Arrangement and Selection.
3. They indicate and keep constant the type of reading.

The skill required to arrange the material in an orderly manner and to select for memory the most important features in an extremely valuable power, but it can and should be measured separately. At the same time a combined test, (*viz.*, one employing after-questions) has value as an Application Test in reference to a certain type of reading situation. The C.B. test with before-questions refers to the situation where one knows more or less what one is looking for; but there is another type of situation which is less a pure reading situation, and probably rather less common, namely where one is required to "read and get the substance of" a passage. We should know here from the circumstances of the case what amount of detail will be required: the problem is to adjust the type of reading to the situation, so as to read neither too slowly nor too fast, neither in too great nor too little detail, to select the essentials required, arrange them, and memorize them.

In the Practice classes (save on one day) Before-Questions were used, with the idea of obtaining a 'purer' effect, *viz.*, pure practice in reading, rather than in reading together with arrangement, selection and memory.

It was necessary therefore to discover whether the improvement effected by training with before-questions caused improvement in a situation involving after-questions¹. We may imagine that one of two effects might be produced when an after-question situation is presented:—

1. The boy may revert to his old style of Observational reading.
2. He may adjust his before-question reading to the new situation by forming hypotheses and looking for their verification. (This is what the normal skilled reader seems to do: he

¹ Since the completion of the work in this connection a very elaborate psychological study on rather similar lines has been published by Gates, A. I. and Van Alstyne, D., "General and Specific Training in Reading," Teachers' College Record, XXV/2, March 1924.

runs through the passage with vague questions in his mind, searching for relevant matter)¹.

If the pupil adopts this latter course he will on an after-question test show improvement as a result of a before-question training.

In order to verify this point the "Blue Lamp" and the "Four Brothers" tests were devised. These are after-question tests in which an indication is given as to the type of reading required. The directions are—

"Read this story as quickly as you can and get the *main ideas*. There will be only ten very easy questions to answer—that is, about two questions per page. So arrange your speed of reading accordingly. Read as fast as you possibly can so as to get the *chief points* of the story. Stand up as soon as you are ready. We shall then give you a question paper and take away the book."

Both stories were re-written from Grimms' Tales to the same standard of difficulty of vocabulary². They contain the same number of words. The score was the time taken to read the story, and the number of questions answered correctly.

The results will be found in connexion with the practice classes. (Tables 56-58).

SUMMARY.

For a general estimate of the reading ability in English of the Bengali student the test devised, C. B. II, was based on a simple story, which presented no difficulties of vocabulary or comprehension. The student was required to underline the answers to certain questions presented to him beforehand. Great care was taken to make the directions clear to all so that these might not influence the scores. Seventy-five per cent. "Comprehension" was required for qualifying, and the score was derived from the time. This is probably a fairly "pure" test of reading: it has a high stimulus value so that children do their best at it. Its "reliability" is high. Its disadvantage is that, being purposely a test rather of word for word reading than of skimming or scanning, in that the questions cover the matter very closely, it does not yield sufficient opportunity to the practised reader of showing his full superiority. For purposes of a general survey of readers who have not been specially practised it is, however, satisfactory. In addition to this test an adaptation of Monroe's Kansas Test was used.

¹ "Reading may be called a kind of observation, since the reader is looking for what the author has to tell; and the rule that holds good for other observation holds also for reading. That is to say that the reader finds most when he knows just what he is looking for..... The best readers.....get the author's question and press on to find his answer." Woodworth, R. S., *Psychology, A study of Mental Life*, 1922, page 267.

² Viz., 1,000 on the Thorndike Word Book. See Chapters 8 and 9 below on the subject of vocabulary standards, and see "Vocabulary. Index" in the Glossary.

³ See Glossary.

Comparing the results of the C. B. II test applied respectively to Bengali boys and to Anglo-Indian girls, and the results of Kansas I applied respectively to Bengali boys and to American children (grade norms being converted by McCall's table into ages) the following result is obtained.¹

Bengali Grade.	Nominal age.	Nearest equivalent C. B. II age-norm, Anglo-Indian girls.	Nearest equivalent age-norm, Kansas I, American children, years and months.
University, M.A. class . . .	21—22	16	..
University, B.A. class . . .	19	14	..
Intermediate College, 2nd year . .	18	13	11—2
Intermediate, 1st year . . .	17	12	10—8
High School—			
Class X	16	10	10—2
Class IX	15	..	9—7
Class VIII	14	..	..

TABLE 47.—Age comparison of Bengali students and boys, Anglo-Indian girls and American children in respect of English Reading.

In addition to the above tests certain others were devised for the special purpose of measuring the improvement of practice classes. A pair of tests of low question-density was evolved in order to indicate the full amount of improvement more satisfactorily than is done by C. B. II-III.

(An investigation of speed in relation to question-density showed that as question-density is decreased, at a certain point a sudden change in the type of reaction appears to take place. It is not possible, therefore, to compare the results of tests of widely differing question-density.)

In order to discover whether practice with before-questions is "transferred" to a situation involving after-questions, an After-question Test was devised, in which the student is informed beforehand of the question-density to be expected.

We have thus attempted, after a review of the principles involved in the measurement of Silent Reading, to investigate the present position as regards the English reading ability of

¹ As an actual case of misunderstanding has already occurred in respect of these comparative data, it is necessary to emphasise here that they only refer to simple Reading ability in English. They state and imply nothing in regard to natural Intelligence.

English Children and Bengali Students. compared in respect of Reading Ability.

English Child aged-15	Bengali Grade equivalent to that age, in respect of—	
	English Reading.	English Vocabulary
	M.A.	
14	B.A.	
13	Inter II	
12	Inter I	
11		
10	Class X	
		Class X
9	Class IX	
		Class IX
8		
		Class VIII
7		
6		Class VII
5		
4		Class VI
		Class V
3		
		Class IV
2		
1		Class III

DIAGRAM 8.

the Bengali. We have, further, attempted to devise a series of tests which, by their analysis of the mental functions involved in reading, will be of use in the construction of a system of practice and of teaching, and which will, as tests, enable us also to measure the nature and the amount of improvement which may be effected by any system of teaching or practice.

CHAPTER 7.

The Improvement of Silent Reading Ability in English in Bengali Students.

It has appeared from the results set out in the previous chapter that the Bengali student of Matriculation and Intermediate standard is deficient in respect of reading ability in English. The problem before us was to enquire whether it was possible to improve him in this respect; if so, how much improvement could be effected in a given time, and by what methods¹.

REVIEW OF EXPERIMENTS IN THE IMPROVEMENT OF SILENT READING.

The experimental data are considerable. Huey and Dearborn suggested that considerable improvement could be made in the rate of silent reading without detriment to comprehension².

Miss O'Shea, under the direction of Henmon³, found improvement ranging from 107 per cent. to 0 as a result of 15 minutes per day practice. Peters⁴ found a gain of 18·7 per cent. as a result of 5-10 minutes per day practice for one year. Waldo⁵ found a gain of 72·7 per cent. in Rate in Grade 3 of American schools but less in the higher grades. Other investigators are Gray⁶ and Oberholtzer⁷. O'Brien⁸ used three types of training, *viz.*, (1) Mere incentive to speed, (2) Incentive to speed *plus* effort to decrease vocalization, (3) Incentive to speed *plus* encouragement of correct eye-movement. The course of practice extended over 39 school days, 30 minutes per day. The results of the three types of training differed little. The net result was an improvement of 80 per cent. on the class records and 56 per cent. on the Courtis Test.

¹ The investigations were conducted with the co-operation of Karim Ahmad Khan Lodhi (and C. C. Chakravarty).

² Huey, E. B., *Psychology and Pedagogy of Reading*, 1910, page 173.

³ Starch, D., *Educational Psychology*, 1919. page 281.

⁴ *Ibid*, page 282.

⁵ *Ibid*, page 283.

⁶ Gray, C. T., *Chicago University, Sup. Ed. Mon. V/1/5*, 1917.

⁷ Oberholtzer, E. E., *Elementary School Journal*, 15, Feb. 1915.

⁸ O'Brien, J. A., *Silent Reading*, 1921; and *National Society, 20th Year Book*, page 54.

All the above investigators were of course training children in the reading of their mother-tongue.

CONSTITUTION OF THE CLASSES FOR AN EXPERIMENT IN THE IMPROVEMENT OF SILENT READING IN ENGLISH OF BENGALI STUDENTS.

Two groups of Intermediate College First year students (nominal age 17) were formed by testing with C.B. II and Kansas. Each boy was paired with another of equal ability as measured by these two tests; each group so formed was divided into two, and in this way two teaching and two control classes were formed. The two teaching classes were balanced as far as possible in respect of total test scores. The procedure in the two classes was identical.

PROCEDURE.

The books used contained easy stories¹; the matter was marked off in numbered units of 200—300 words. The question-density was about 10-15. The questions referred to the salient points of the story. The questions in the first and second experiment were written on the black-board; in the third they were hectographed.

All words likely to prove difficult were written upon a separate black-board before the class with their equivalents in Bengali. The words were selected for this purpose with the help of the Thorndike Word Book. A student could ask the meaning of any word not included in the vocabulary thus supplied, but this was rarely done.

The class was opened with an explanation of the purpose of the work and of the value of reading ability.

The procedure thereafter was as follows:—

1. The teacher read and explained the questions of a section (the books being face downwards); he also drew attention to the vocabulary for that section.

2. Teacher, "Ready for Section 2; Ready; Ready; Begin."

The students then turned up their books and began reading.

¹ *E.g.*, Robinson Crusoe, Sinbad the Sailor in words of one syllable. The Wizard's Chair, Cassell's Fairy Tales, Grimms' Fairy Tales, Oxford Series of Indian Readers, etc.

3. As soon as a student had found the answers to the questions, he turned his book face down and stood up.

4. The teacher then announced the time (*viz.*, the time from "Begin" to the moment of standing. This announcement was made by writing the time on the board). The great need of a mechanical timer at this point led to the construction of the machine described in the first Appendix to this chapter.

5. The student noted the time¹ in the margin of his answer paper and wrote the answers.

6. When all the students had written the answers, the teacher gave the order "Pencils down" and announced, very rapidly, the correct answers. (This was done to preserve the continuity of the story for those who had got an answer wrong). He then proceeded at once to the next section.

At the end of the hour the papers were collected; the total number of words in the passages read divided by the total of the times noted on each individual paper was entered on one graph, and the percentage of correct answers was entered on another. Individual and Class graphs were recorded daily: these were exhibited and discussed each day at the beginning of the lesson. Accuracy of at least 90 per cent. was demanded and for the most part this figure was exceeded.

Students who vocalised or made lip movements were advised that these practices were adverse to rapid reading. Pencil movements and finger movements were also discouraged—(running the pencil or finger along the line, or vibrating it to and fro over the book).

LENGTH OF PRACTICE PERIOD.

The practice period was in each of the three experiments one hour a day for sixteen working days.

THE MEASUREMENT OF IMPROVEMENT.

Improvement was estimated from the actual graphs of the work, and by means of Before and After Tests.

¹ A supervisor or the teacher saw that this was done correctly.

The improvement in the first experiment as indicated by the class record is shown below :—

Individual.	Initial rate, words per minute.	Rate after practice words per minute.	Initial accuracy per cent. answers correct.	Accuracy after practice.	Percentage of gain in rate.
Roll—					
307 .	159.5	712.1	100	100	346
331 .	265.3	952.2	100	100	259
353 .	173.2	903.4	93.8	100	422
310 .	176.9	721.9	94.6	96.0	308
314 .	125.8	512.7	93.8	96.2	308
332 .	150.3	500.2	82.5	97.8	233
345 .	141.1	518.7	100	93.8	268
351 .	196.7	402.1	93.8	97.7	104
316 .	228.4	301.5	100	100	32
328 .	136.2	7 8.7	82.5	98.5	479
333 .	224.1	306.9	100	100	37
340 .	122.7	341.8	82.5	98.6	179
431 .	112.1	293.0	93.8	96.6	161
277 .	92.9	284.9	83.3	97.7	207
Mean .	104.7	538.6	92.9	98.1	239

TABLE 48.—The Gain in Rate and Accuracy of English Reading in the First Experiment (Intermediate College First year), as shown by the Class Records.

THE SECOND EXPERIMENT

In the second experiment the procedure used was the same as in the first. The results of the test are shown in Table 57.

THE THIRD EXPERIMENT.

The third experiment was made at a different college and by the first teacher (Mr. Karim Ahmad Khan Lodhi). The procedure was the same save that hectographed question sheets were used instead of questions written on the black-board.

The results according to the Class Records are shown below:—

Individual.	Initial rate, words per minute.	Rate after practice, words per minute.	Initial accuracy.	Accuracy after practice.	Percentage of gain in rate.
176 . .	452.0	1,070.5	77.2	90.1	136.8
109 . .	271.1	680.5	93.2	92.2	151.0
103 . .	346.4	1,054.5	95.4	100	204.4
113 . .	326.7	1,265.5	97.0	92.5	287.4
106 . .	268.0	834.5	88.8	96.5	211.4
24 . .	406.8	1,010.5	90.9	89.9	148.4
98 . .	275.8	713.3	93.1	90.2	158.6
14 . .	417.7	579.1	88.6	89.9	38.6
116 . .	184.2	426.5	88.5	89.9	131.5
112 . .	239.6	712.9	87.1	89.9	197.5
10 . .	266.7	375.5	75.0	90.6	40.8
95 . .	460.1	1,010.0	80.0	90.0	119.5
117 . .	236.9	500.5	90.7	100	111.3
97 . .	326.7	650.5	97.0	89.9	99.1
105 . .	200.9	698.5	96.0	98.5	140.1
99 . .	205.5	781.8	84.0	98.9	194.5
Mean .	314.7	772.8	88.9	93.1	148.2

TABLE 49.—The Gain in Rate and Accuracy of English reading as shown by the Class-Records in the Third Experiment.

The following record was made as a check on the efficiency of the method. It was found in the early stages that (as in most ordinary class-room practice) there was a tendency to spend too much time on accessories and too little on actual reading¹. The accessories are of course a necessary part of the work, but they should be reduced to a minimum. Secondly

¹ O'Brien gave a general direction that not more than one quarter of the time should be spent on reproduction; but he does not show to what extent his rule was observed; he used oral after-questions scattered at random. Silent Reading, page 96.

the criticism may be made that the best boys in this method must waste much time in waiting while the slower boys are finishing. Some time is lost in this way, but it will be seen that the actual loss is probably not very great.

In any ordinary "reading class" in a school it is rare to find more than 30 per cent. of the total time actually spent in reading.

1ST EXPERIMENT.			3RD EXPERIMENT.	
Day.	Words read.	Percentage of time spent in reading.	Words read.	Percentage of time spent in reading.
1 . .	1,741	37	1,009	40
2 . .	3,130	53	3,591	45
3 . .	4,334	61	4,551	50
4 . .	4,371	57	5,411	51
5 . .	3,572	58	2,367	40
6 . .	3,320	50	3,377	43
7 . .	3,032	40	3,391	41
8 . .	3,203	51	3,839	44
9 . .	5,009	51	4,343	40
10 . .	4,025	50	4,104	44
11 . .	3,425	48	3,710	45
12 . .	3,277	40	2,763	13
13 . .	4,480	45	3,919	44
14 . .	6,675	50	3,750	48
15 . .	4,616	48	4,120	44
16 . .	3,418	36	4,039	43
Mean .	3,880	49	3,842	44

TABLE 50.—Amount read and Percentage of time spent in reading, in the First and Third Experiment. (The periods were of one hour).¹

¹ In experimental classes in schools where this record was kept as an incentive to the teacher a higher percentage was obtained (60—70 per cent.) because the boys read more slowly, hence the time spent in subsidiary matters (reading over questions, writing answers, etc.) bears a relatively smaller proportion to the reading-time.

THE RESULTS AS MEASURED BY TESTS.

In the first experiment the following tests were used:—before the practice—C.B. II, and Kansas Form I; after the practice C.B. II (as a preparation for C.B. III), O.B. III, Kansas Form II, “Blue Lamp.”

The “Blue Lamp” Test was included in order to discover whether practice using before-questions caused any transference of improvement to a test which employs after-questions. In the third experiment all tests were given before and after.

Test.	CONTROL CLASS.		EXPERIMENTAL CLASS.		PERCENTAGE IMPROVEMENT.	
	Before.	After.	Before.	After.	Control.	Experimental Class.
					Per cent.	Per cent.
Kansas rate . . .	50.0	83.0	59.0	99.0	40.7	67.8
Kansas Comprehension	10.0	15.9	10.0	20.3	59.0	103.0
C. B. II and III .	86.0	73.0	87.0	55.0	17.8	58.2
	Control Class.		Experimental Class.		Superiority of the Experimental expressed as a percentage of the Control.	
					Per cent.	
Blue Lamp (Time units) (After practice).	84.5		56.0		50.9	
Blue Lamp Comprehension.	70.2		78.6		12.0	

TABLE 51.—Percentage of Improvement in various tests in Experiment I (Class median scores).

Test.	CONTROL CLASS.		EXPERIMENTAL CLASS.		PERCENTAGE IMPROVEMENT.	
	Before.	After.	Before.	After.	Control Class.	Experimental Class.
					Per cent.	Per cent.
Kansas rate . . .	64.0	80.2	62.7	90.3	25.3	44.0
Kansas Comprehension	9.0	13.6	8.5	15.7	51.1	84.7
C. B. I. II and III	97.0	80.0	98.0	62.0	12.8	58.1

* Calculated from the means.

Test.	Control Class.	Experimental Class.	Superiority of the Experimental expressed as a percentage of the Control.
			Per cent.
Blue Lamp (Time units)	91.5	77.0	18.8
Blue Lamp Comprehension.	86.9	80.9	—6.9

TABLE 52.—Percentage of Improvement in various tests in Experiment II (Class median scores); Data from Table 57.

THE TEST RESULTS OF THE THIRD EXPERIMENT.

It will be observed that the gain in rate as recorded by the practice records is considerably in excess of that recorded by the C.B. test. The mean gain on the class records is 239 per cent. as against a gain of 58.2 per cent. on the class median scores on C.B. 2-3. Thus the C.B. test does not indicate the full measure of improvement, the reason being, as explained in the previous discussion of tests, that the higher the question-density, the less the difference recorded between the fast and the slow reader. For this reason the "Beauty and the Beast" and "Little Brother and Sister" pair of tests was devised, and the experiment was repeated.

On this occasion the "Blue Lamp" test was applied before practice, and its pair-test, "The Four Brothers," was applied after practice in order to measure the effect of a before-question practice on reading with after-questions.

The students used in this experiment proved to be better, initially than those used in the first, and the improvements are therefore slightly less marked.

The gains on the tests are shown below (Table 53).

Test.	CONTROL CLASS.		EXPERIMENTAL CLASS.		PERCENTAGE OF IMPROVEMENT.	
	Before.	After.	Before.	After.	Control.	Experimental.
Kansas Rate, uncorrected.	87.0	113.5	87.0	123.0	30.5	41.4
Kansas Rate, corrected.	87.0	113.5	87.0	140.6	30.5	61.6
Kansas Comprehension, uncorrected.	16.0	22.6	15.5	24.4	41.3	56.1
Kansas Comprehension, corrected.	16.0	22.6	15.5	29.2	41.3	88.4
Blue Lamp—Four Brothers, Rate.	81.0	68.0	80.5	30.0	19.1	123.6
Blue Lamp—Four Brothers Comprehension.	8.6	8.6	9.5	9.4	0	—1.0
Beauty and Beast—Little Brother.	88.5	63.5	83.0	27.5	39.4	201.9
C. B. 2—C. B. 3	68.5	57.5	73.5	41.0	19.1	79.3

TABLE 53.—Percentage of Improvement in various tests in Experiment 3 (class median scores).

In the above figures it will be noted that the greatest gain is in the test which has the lowest question-density, *viz.*, "Little Brother and Sister" (Density 2.7). The "Blue Lamp"—"Four Brothers" test shows the next greatest gain with a question-density of 7.5.

It appears from the "Blue Lamp"—"Four Brothers" Test that improvement in rate of reading effected by training with before-questions is actually transferred to work with after-questions.

The students were interrogated after the test and were of the opinion that the ability gained in the practice was transferred to their normal studies.

THE EFFECT OF PRACTICE IN ENGLISH READING ON THE SPEED OF BENGALI READING¹.

In connexion with the experimental class used to determine the relationship between density and speed, an experiment

¹ These experiments were conducted by H. C. Bannerjee, A. K. Dutta and the author.

The Improvement of English Reading.

In each case the practice period was 16 hours.

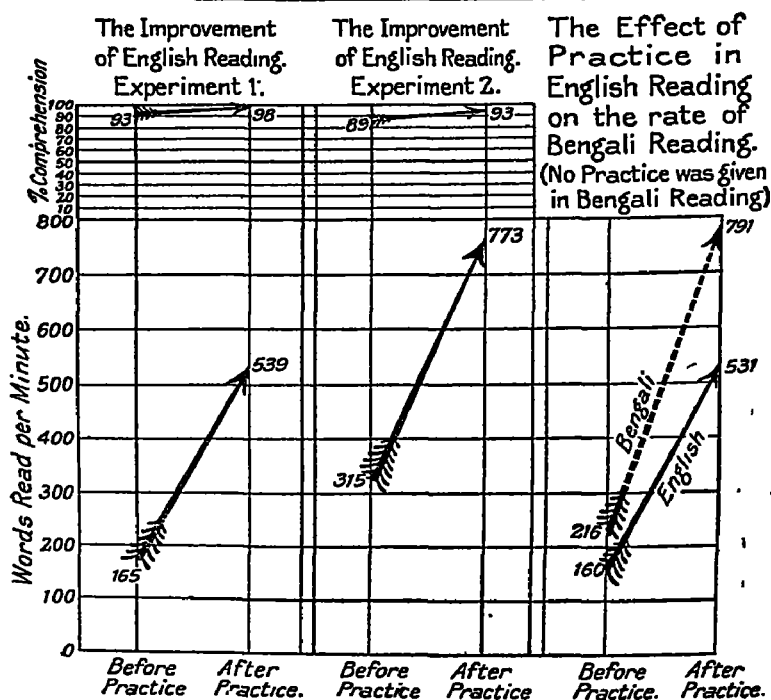


DIAGRAM 9.

was made to determine whether the improvement effected by training in English Reading was transferred in any degree to Bengali Reading.

The Bengali test was selected from "Islam Kahini" and was a story unknown to the students. Twelve students were present at all the tests. Accuracy was constant. The practice, extending over 20 periods, was carried out in English only and was conducted on the same lines as in the three experiments described above, using the same books.

The very marked transference effect appears to indicate that the Bengali student's deficiency in English reading is in part at least due to a general reading deficiency, and not merely to a specific deficiency in English.

Density.	ENGLISH.		BENGALI				ENGLISH.	BENGALI.
	Rate (words per minute) before Practice.	Rate after Practice.	Density.	Rate before Practice.	Density.	Rate after Practice.	Per cent Improvement.	Per cent. Improvement.
10	116	428	8.5	130	8.5	526	260.0	304.6
5	160	531	5.2	205	5.5	674	231.9	228.8
			4.7	216	4.8	791		266.2

TABLE 54.—The Effect of Practice in English Reading on the rate of Bengali Reading. (12 cases.)

INTERPRETATION OF THESE RESULTS.

The results of these four experiments appear to point to the following conclusions:—

1. That the deficiency of the Intermediate First year student in reading ability in English is due to a general defect in Reading rather than to a specific defect in English. (This conclusion would seem to be supported by the nature of the teaching of the mother-tongue in the schools, which resembles rather the formal method of teaching Latin than modern methods of teaching a living language).

2. It appears that this defect can be remedied without any great effort. It is not of course suggested that it can be completely righted in 15-20 hours. The material used in these experiments was very simple; a training in arrangement and memorization of more difficult material would need to be added. It might however be supposed that suitable practice for two periods per week throughout the first year of the Intermediate

course and a modification in the examination so as to encourage efficiency in reading would make a very marked difference. It is moreover desirable that something should be done in this respect before the boy reaches the Intermediate stage, and a simple reading test as a part of the Matriculation examination in place of the present examination on some of the more formal aspects of English would be a most reasonable innovation.

3. In regard to the method of practice used, the value of the Before-question as a method of training with pupils of this age and standard seems to be indicated. Before-questions tend to produce the forward urge and the searching attitude which are characteristic of skilled readers.

The above results tend to confirm the finding of previous investigators that Silent Reading is a process which is capable of very considerable improvement at the cost of comparatively little time and effort. The present experiments differ from previous experiments in that the period of training was shorter, and the gain relatively larger. This result may be attributed to the following causes:—

1. The students were older than is usual in such experiments.
2. They were, in respect of reading, probably more backward than the pupils of American experimental groups.

According to Anglo-Indian C.B. II norms the initial reading ages of the groups were, Experiment I—age 11, Experiment II—age 9; Experiment III—age 13. Comparing the final C.B. III test with Anglo-Indian C.B. III norms the mean reading rate of the class in Experiment I became equal to the norm of age 14, in Experiment II to the norm of age 12, in Experiment III to the norm of age 18. Thus in general the effect of training tended to bring a backward class up towards its age-norm: this is probably less difficult than to raise children above their age-norm in the reading of their mother-tongue.

The rapidity of improvement and the nature of the individual practice graphs is such as to suggest that we are not here dealing—as appears to be assumed in records of some previous experiments of this nature—with the improvement of a single mental function. This conclusion is supported by the results of the experiment on Question-density in relation to Rate, in which the unpractised student failed to adjust himself to reading situations of low question-density, while the practised

reader showed at a certain point a definite and distinct change of method. (See Tables 39 to 46.) It is therefore suggested that what these Practice-classes have done is, not to increase the speed of the elementary function of reading (in respect of speed of eye-movements, speed of word perception, etc.), but to supply a *new method of response* more efficient and more rapid than the old. Thus the improvement may be considered not as a growth of skill in one function, but as a transition from the childish type of Observational word-by-word reading to an adult type of Purposive "Scanning." The subjects of the experiment were "children" in respect of reading before training, because probably never before in their school education and under the defective cultural influences of their homes had they been required to, or felt the incentive to read at a high speed. They had probably never been required to tear the heart out of many books in "getting up" a subject, nor felt the urge which comes from the perusal of literature for pleasure and appreciation. Bengali school boys read relatively rather little even in their own language, and their teachers very often read not much more, as will be gathered from the figures given below.—Non-Government schools form the vast majority in the country.

Institution.	Average Roll, 1923.	Books issued to boys (or students), 1923	Books per boy (or student) per annum	No of Teachers, 1923	Books issued to teachers in 1923.	Books per teacher per annum.	REMARKS.
<i>Schools.</i>							
Government School .	488	611	1.3	25	163	6.5	Good Library.
Non-Government School.	412	171	0.4	17	37	2.2	Poor Library.
Intermediate College	380	1,533	4.0	31	518	16.7	Good Library.
<i>Dacca University.</i>							
Arts and Science .	1,051	23,403	22.4*	77	4,740	61.7	Makes a special feature of encouraging the use of the library.
Teachers' Training College, Dacca.	77	2,016	26.2	7	314	44.0	Mainly students Good Library.

TABLE 55.—The number of books issued from the Library per annum per student and per teacher in various educational institutions in Dacca.

* This does not include the Seminar or Hall Libraries.

Anything in the nature of History teaching as done on "The Palton Plan" is unknown in the schools; in the Intermediate Colleges and even in the University in Bengal the students tend to confine their efforts to the study of a few set textbooks¹. The houses of many of the parents contain but a very meagre library, and the attitude of the Bengali parent to novels in many cases resembles that described by Jane Austen²; he describes them as often immoral and perverse and the reading of them invariably a waste of time. It is not therefore surprising that we sometimes find the student of the "Pass" or even "Honours" classes strangely ignorant of all that lies outside the little range of his immediate studies. In respect of reading ability his condition corresponds to that of the pre-adolescent Anglo-Indian girl, before she has begun the normal "Reading Craze".

We should not blame Bilingualism for this; nor should we blame the teachers and the homes, for they themselves are the products of a more far-reaching cause. The blame lies most justly at the door of the examinations and of the curricula; for both in the vernacular and in English, they imply—and produce—a wrong attitude to language-study. They emphasise the ability to write the language, the ability to learn up a short textbook with its burden of notes, to worry out the translation of a few lines; they do not emphasise or test the ability to read, to gather ideas and learn from books. They emphasise the expressive function of language, and leave their products without the means of obtaining ideas to express. —

SUMMARY.

The purpose of these experiments was to determine by what means and to what extent the English Reading ability of Bengali Intermediate students could be improved.

Three experiments were made; in the first and second it was found that the tests used, owing to their question-density, did not show the full amount of improvement as indicated by the class records. For the third experiment tests of lower density were devised. The three experiments go to show that even in so short a practice period as 16 days a very marked improvement can be effected. The result is to bring Bengali Intermediate students from a standard equivalent (on the C.B. test).

¹ An effort to improve this has been made at the Dacca University.

² Northanger Abbey, Ch. V.

³ Hall, G. S., *Adolescence*, 1911, Vol. II, page 467.

to Anglo-Indian age 9-13 to a standard equivalent to age 12-18, Anglo-Indian girls, or, on Bengali norms, a standard superior to that of the M.A. Class, a gain of four years in three weeks.

This improvement is not due to increase of skill in the same function; it is due to the replacement of the childish type of reading by the adult type.

. It appears that Before-questions are an effective method of training and that their practice-effect is transferred to an After-question Test.

The practice-effect in English Reading is transferred to Bengali reading. This appears to indicate that the defect of the Bengali is a general defect in reading ability rather than a specific defect as regards English. This is what would be expected in view of the rather meagre amount of reading of the average Bengali student. The root cause of this condition lies probably in the wrong attitude towards language study shown in the curricula and examinations, over-emphasising Expression: the Receptive aspect of language—the art of reading—is neither taught nor tested.

APPENDIX I TO CHAPTER 7.

A "Work-limit" Timing Machine.¹

In the *Journal of Educational Psychology*² Robinson describes an instrument for timing Work-Limit group tests, *viz.*, tests in which the score or a part of the score of the pupil is derived from the time taken to complete a certain task.

The device there described consists of 31 numbered cards, 4 inches by 5, running on a double wire. The numbers are three inches high. The first card (zero) is turned over as soon as the first paper is shown up, and that paper is marked zero: the other cards are turned over at 5 second intervals and the subsequent papers are marked according to the numbers on the cards. A constant time (from the start to the handing in of the first paper) is added to all the scores. The cards are turned over by hand.

Stone³, in his Reading Test uses a device very similar to that described above. The cards are worked by hand, and he suggests the employment of a "capable boy from the upper grades" for the purpose. He also adds a constant.

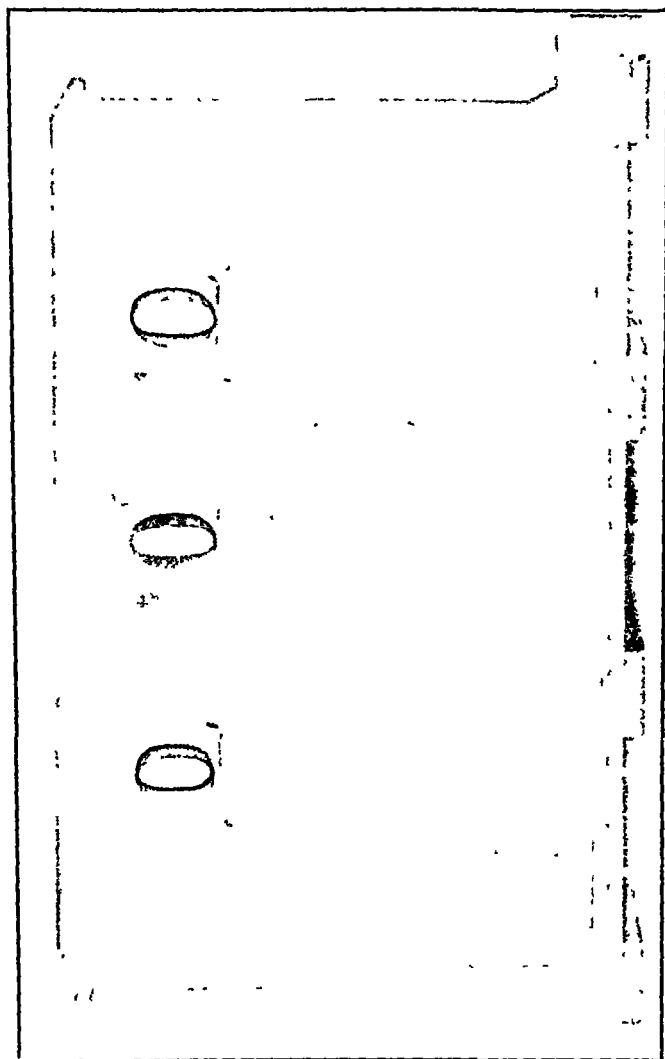
This adding of a constant would greatly increase the labour of marking a large scale test carried out with several different groups or classes. In the case of Practice Classes in which several work-units are done in a single period, it might be liable to produce errors. The purpose of the constant appears to be to economise the number of cards. If the times are written up on a black-board, there is no need to use a constant. The only disadvantage of the black-board is that about the Mean Time there is a rush, and the black-board operator has hardly time to write up the numbers. If however the twenty or thirty numbers round about the probable mean time be written up on the board before the test, the times up to and after these scores can be written up individually as required, but at the busy time the operator has only to point.

¹ This account was originally published in the *Journal of Educational Psychology*, April 1925, and is reprinted here by permission of Messrs. Warwick and York.

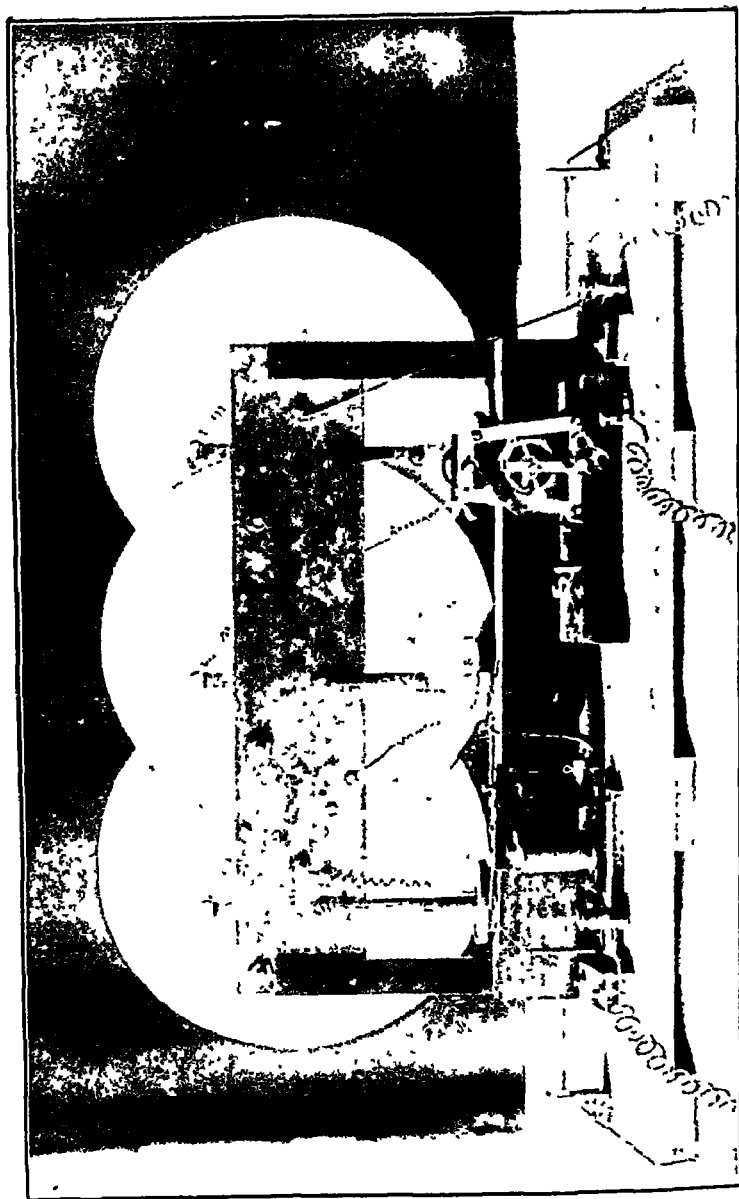
² Robinson, B. W., A New Timing device for Work-Limit group tests, *Journal of Educational Psychology*, XIII/8, November 1922.

³ The Stone Series of Narrative Reading Tests (Directions), 1922.

NOTE.—This work was done in conjunction with my brother C. F. W. West, for whose assistance I am extremely grateful. The machine was constructed by Mr. James Aird.



A WORK-LIMIT TIMING MACHINE



A WORK-LIMIT TIMING MACHINE.

This method works very well in practice, but it suffers from the same disadvantage as the two methods noted above, namely that it requires an assistant in addition to the teacher or test-director. In the case of a test this does not matter much, for a test is usually an important and rather costly matter and of not very frequent occurrence, so that special staff can always be mobilised for it. But in the case of a Practice Class, which is held regularly for some considerable period, the need of an assistant is a serious objection. A method of teaching which requires two persons, a teacher and an assistant, is impracticable in any ordinary school.

For test work it is a convenience, but for practice-work it is an absolute necessity to have an automatic system of time-recording which makes it possible for one teacher to conduct the work unassisted.

The machine required is one which will show figures at least two inches high, from 1 to 999 at regular intervals. It should, ideally be possible to vary the interval for different types of work; but, if the interval must be fixed, it should be 6 seconds in order that the Unit-scores may, by the insertion of a decimal point, be converted into minutes without arithmetical labour. The machine must be reasonably silent, and one which can be readily set back to zero.

The 'turn-over' type of action as used by Robinson was considered; a similar mechanism was used in a clock of German manufacture which appeared on the market about 1910: the idea was rejected as likely to prove costly and difficult to manufacture. A Maltese-cross action running a chain of number boards was considered and rejected as not giving a sufficient range of numbers. A "Frena" camera action would give a good range but would be troublesome to set back to zero. A machine consisting of three revolving dials was finally decided upon.

The first model constructed was driven by clockwork, with the idea of making it portable, but the machine had not power to turn number-disks of sufficient size, and was very noisy. It was therefore rejected.

If a weight-driven model must be used, one might just as well, from the point of view of portability, have an electric model running from an accumulator. In the second model, therefore the original transmission of the clockwork model was retained, but the machine was actuated by a solenoid driven from contacts on a clock. It was found that the light contact

possible on a clock, with the large current required to actuate the solenoid, was apt to 'chatter' and give double strokes. Hence the clock was made to actuate a Relay.

The instrument was a failure owing to its mechanical tens-transmission,¹ which required so much power on the double transmission, (*c.g.*, 99 to 100) that it over-ran¹ on a single transmission or a simple unit stroke, and none of the checking devices used on calculating machines succeeded in preventing this. This machine was therefore also rejected.

In the third attempt each dial was actuated by an independent solenoid, the tens-transmission being electrical. The difficulty encountered in this machine was that the contact on the unit solenoid was so short that it would not give the Tens and Hundreds solenoids time to act. This however was overcome by making the Unit solenoid merely start the movement, which was completed by an extra contact on the Ten and Hundred solenoids.

This model was then finally adopted.

The machine works silently and is capable of giving any time-unit required. As at present fitted it gives intervals of 4, 5 or 6 seconds, but by a very rapid and easy adjustment it could be made to give any other three intervals preferred. The electrical tens-transmission has the special advantage that the dials can be very readily set to zero by turning each backwards independently, a matter of a few seconds only,—whereas in a mechanical transmission zeroising is always difficult.

¹ See Glossary.

APPENDIX 2 TO CHAPTER 7.

Results of tests of the First, Second and Third Experiment in the improvement of English Reading in Bengali Students.

Test.	EXPERIMENTAL CLASS.		CONTROL CLASS.	
	Measure.	Score.	Score.	Gain in favour of the experimental class.
Kansas I, Rate . . .	Before practice—			
	Mean . . .	61.5	61.5	...
	Median . . .	59.0	59.0	...
	S. D. . . .	15.7	15.7	...
" II " . . .	After practice—			
	Mean . . .	99.8	86.3	13.5
	Median . . .	99.0	83.0	16.0
	S. D. . . .	18.0	20.3	.
" I, Comprehension.	Before practice—			
	Mean . . .	9.8	9.8	...
	Median . . .	10.0	10.0	...
	S. D. . . .	3.6	3.1	...
Kansas II, Comprehension.	After practice—			
	Mean . . .	20.3	17.3	3.0
	Median . . .	20.3	15.9	4.4
	S. D. . . .	4.5	4.8	...
C. B. II (Time-units)	Before practice—			
	Mean . . .	87.2	87.1	..
	Median . . .	87.0	86.0	...
	S. D. . . .	15.7	12.6	...
	After practice—			
	Mean . . .	52.0	72.3	19.4
	Median . . .	49.5	72.5	23.0
	S. D. . . .	14.3	20.1	...
C. B. III (Time-units)	After practice—			
	Mean . . .	51.8	80.8	26.0
	Median . . .	55.0	73.0	18.0
	S. D. . . .	12.3	20.2	...
Blue Lamp (Time-units)	After practice—			
	Mean . . .	57.8	85.2	27.4
	Median . . .	56.0	81.5	25.5
	S. D. . . .	15.1	20.1	...
" Comprehension .	Mean . . .	80.3%	70.6%	9.7%
	Median . . .	78.6%	70.2%	8.4%
	S. D. . . .	12.9	17.9	...

TABLE 56.—Results of tests of the First Experiment in the improvement of English Reading Ability in Intermediate Students.

Test.	EXPERIMENTAL CLASS.		CONTROL CLASS.	
	Measure.	Score.	Score.	Gain in favour of the experimental class.
Kansas I, Rate	Before practice—			
	Mean . . .	92.7	64.0	..
	Median . . .	87.0	59.0	...
" II "	S. D. . . .	16.1	18.7	.
	After practice—			
	Mean . . .	90.3	80.2	10.1
" I, Comprehension.	Median . . .	76.0	76.0	...
	S. D. . . .	20.2	19.6	
	Before practice—			
Kansas II, (Comprehension.	Mean . . .	9.8	9.7	..
	Median . . .	8.5	9.0	..
	S. D. . . .	3.7	3.6	...
C. B., II	After practice—			
	Mean . . .	16.9	14.9	2
	Median . . .	15.7	13.6	2.1
	S. D. . . .	4.7	4.3	...
	Before practice—			
	Mean . . .	97.4	97.4	...
	Median . . .	98.0	97.0	...
	S. D. . . .	10.9	17.8	...
	After practice—			
	Mean . . .	59.6	70.4	10.8
	Median . . .	62.0	73.0	11
	S. D. . . .	17.2	19.2	...
C. B., III. . . .	After practice—			
	Mean . . .	59.0	85.4	26.4
	Median . . .	62.0	88.0	26
	S. D. . . .	13.9	21.2	...
	After practice—			
Blue Lamp (Time-units).	Mean . . .	75.4	90.6	15.2
	Median . . .	77.0	91.5	14.5
	S. D. . . .	13.7	27.2	...
" Comprehension .	Mean . . .	77.8%	78.7%	—0.9%
	Median . . .	80.9%	86.9%	—6.0%
	S. D. (scores) .	8.2	6.8	...

TABLE 57.—Results of tests of the Second Experiment in the improvement of English Reading Ability in Intermediate Students.

Test.	Measure.	Experi- mental Class.	Control Class.	Gain in favour of the Experi- mental Class.
Kansas, Rate	Before practice—			
	Mean.	91.2	88.8	...
	Med.	87.0	87.0	...
	S. D.	13.8	12.2	...
	After practice—			
	Mean.	130.2	106.5	32.7
	Med.	123	113.5	...
Kansas, Comprehen- sion.	S. D.	(110.6) ¹ 22.0	24.8	27.1 ...
	Before practice—			
	Mean.	15.2	15.4	...
	Med.	15.5	16.0	...
	S. D.	2.2	2.5	...
	After practice—			
	Mean.	28.1	20.4	7.7
C. B., II	Med.	24.4 (20.2)	22.6	...
	S. D.	5.7	5.2	6.6 ...
	Before practice—			
	Mean.	70.6	69.2	...
C. B., III	Med.	73.5	68.5	...
	S. D.	16.5	15.6	...
	After practice—			
	Mean.	30.8	58.8	19.0
Beauty and the Beast	Med.	41.0	57.5	16.5
	S. D.	8.4	14.1	...
	Before practice—			
	Mean.	85.3	87.9	...
Little Brother and Sister.	Med.	83.0	88.5	...
	S. D.	22.4	23.5	...
	After practice—			
	Mean.	23.3	66.4	33.1
Blue Lamp, Time-units	Med.	27.5	63.5	36.0
	S. D.	12.5	10.1	...
	Before practice—			
	Mean.	78.7	80.1	...
Four Brothers, Time- units.	Med.	80.3	81.0	...
	S. D.	12.4	13.8	...
	After practice—			
	Mean.	37.0	60.8	32.8
Blue Lamp, Compre- hension.	Med.	36.0	68.0	32.0
	S. D.	10.5	15.1	...
	Before practice—			
	Mean.	9.5	8.6	...
Little Brother, Com- prehension.	After practice—			
	Mean.	9.4	8.6	0.8

Correcting for those who finished before time.

TABLE 58.—Results of tests of the Third Experiment in the improvement of English Reading Ability in Intermediate Students.

CHAPTER 8.

The English Vocabulary of a Bengali Boy.

The measurement of the English vocabulary of a Bengali boy is, compared with that of Silent Reading, a relatively simpler task: we have the advantage of knowing precisely what we are setting out to measure and the measurement itself involves no great technical difficulties. On the other hand there is relatively little antecedent work to serve as a guide; and such as there is tends rather to mislead.

THE VALUE OF THE MEASUREMENT OF VOCABULARY.

The value of the measurement of vocabulary lies in the assistance which it affords in determining rates of progress in vocabulary.

The number of words taught per annum in different reading-books intended for the same grade varies very widely. Thus among four series of books in common use in Bengal, the number of new words introduced at each stage is:—

	Series 1.	Series 2.	Series 3.	Series 4.
Primer	353	327	313	844
1st Reading-book .	420	572	292	377
2nd Reading-book .	383	464	639	543
TOTAL .	1,165	1,363	1,244	1,764

TABLE 59.—The number of New Words introduced at each stage in various English Reading-books intended for Indian children.

The number of new words to be introduced per annum should presumably show some regular increase, or decrease, or constancy, and should be based on some knowledge or theory as to the number of words which a boy can learn in a year, or must learn in a year in order to reach a certain standard at the end of the course; but these figures show no regularity of any kind.

As a basis of discussion in regard to the rate of progress in teaching experiments and in the design of courses it is very necessary to know what is the actual rate of progress of a Bengali boy in English vocabulary under present conditions and methods of teaching.

TYPES OF MEASUREMENT.

(a) *Tests of Vocabulary in a foreign language.*

Very few measures have been taken of vocabulary in a foreign tongue; indeed only two are known to the present writer, viz., Henmon's¹ Standardized Vocabulary Tests in Latin, and in French. These tests were constructed by tabulation of the words contained in a number of widely used textbooks. The final list thus obtained was divided into separate lists. The statistical values of various scores (numbers of words correctly interpreted) were derived from the result of a preliminary test. The pupil's response takes the form of writing the English meaning of the foreign word. The scores of this test have a statistical meaning but cannot be interpreted in terms of number of words in the total vocabulary.

(b) *Tests of Vocabulary in the mother-tongue.*

Estimates of the extent of vocabulary in young children in the mother-tongue have been made by record and tabulation of the words used in actual conversation², but this method is obviously inapplicable to older children and to foreigners; moreover it measures the speaking, not the Reading, vocabulary. Burt³ uses an individual test based on age norms, but we are concerned rather with Group tests. The Thorndike Visual Vocabulary is a commonly used Group test⁴: the material used consists of lines of words, each successive line being of increasing difficulty; eight different initial letters are to be written under the various words, e.g., W. under every word which has to do with War or fighting, B. under every word which has to do with money or Business, and so on. There are ten lines, each of ten words. The test yields a score,

¹ Henmon, V, The Measurement of Ability in Latin, *Journal of Educational Psychology*, Nov.-Dec. 1917 and March 1920. Standardized Vocabulary and Sentence Tests in French, *Journal of Educational Research*, III/2, Feb. 1921.

² Tracy, F., *Psychology of Childhood*, 1903, page 142.

³ Burt, C., *Mental and Scholastic Tests*, 1921, page 340.

⁴ Teachers' College Bulletin, XI/3, Feb. 1920, and Teachers' College Record, Sept. 1914, Nov. 1916.

but not an estimate of the actual size of the vocabulary of those tested. Its great disadvantage is the complexity of the directions, which would tend in the case of younger children to make it rather a test of ability to follow directions, than of vocabulary. In a later (1923) test¹ of word knowledge devised by the same investigator the material consists of 100 words, each having five alternatives set beside it. The synonym is to be selected and underlined. The test yields a statistically correct score, but no estimate of the actual size of vocabulary. This test is interesting in that, for the selection and arrangement of words, the Thorndike Teachers' Word Book is used. This type of test was used by the present writer in Dacca in 1921 but was rejected, as it was found that an element of boredom or fatigue was introduced owing to the number of words to be considered. Thus to measure the knowledge of 100 words it was necessary to present 500 words: (Thorndike uses five alternatives, and thus presents 600 words). The work was done with small children, and it is possible that Bengali children, being less accustomed to this type of work, are more susceptible to this cause of unreliability.

Tests which give an actual estimate of size of vocabulary are those of Kirkpatrick and of Terman and Childs.² In both cases the words are selected at regular intervals from a standard dictionary. The pupil is examined orally; or he may be asked to mark those words which he knows, while a subsequent check is made by requiring him to justify his markings by means of a selected list of words which he is required to define in writing.

The score of Kirkpatrick's test is multiplied by 280, and the score of Terman and Childs' test by 180 in order to yield an estimate of total vocabulary.

The words of Terman's test are arranged in approximate order of difficulty; the credit-indices³ of the words on the Thorndike Word List (though this was not used in its construction) tend to increase, but the two lists, as given in the

¹ Thorndike, E. L. and Symons, P.. "Difficulty, Reliability and Grade achievements in a test of English vocabulary," Teachers' College Record, XXIV/5, Nov. 1923.

² Whipple, G. M., Manual of Mental and Physical Tests, 1921, page 674.

³ A "Credit-index" in a Word-frequency list is an index-figure appended to each word which is derived from the comparative commonness of that word in the language and indicates the relative value of the word to a person learning the language. Thus the credit-index of "the" is 208, while that of "cherubim" is 7.

Stanford Binet Simon Tests¹, differ greatly in their total credit-index,—List I, 532, List II, 394. The order of the first twenty-two words in each list is criticised by Margaret Cobb², and by totalling the scores (*viz.*, Times answered correctly in Miss Cobb's experiment), and expressing them as a percentage of Times Asked, List I (first 22 words) is found easier than List II (first 22 words) by 8 per cent. (49 per cent. as against 41 per cent). It is the general experience of those who have used the Stanford Binet-Simon Test that List I is easier.

The Terman test is properly an individual test. It has however been adapted by Weeks for use as a group test by requiring written answers. The correlation of the results of the group test with the results of the individual test applied to the individuals of the same group is 0.75³.

The Terman test is not a good measure of the English vocabulary of a foreigner, as Terman himself admits:—"With children whose home language is not English it is of course unreliable."⁴ The reason of its unreliability—not discussed by Terman—lies in the nature of the words selected. Of one hundred words contained in the test only two occur in the first thousand commonest words in English as shown in the Thorndike Word Book⁵; forty-three of the words are outside the 10,000 commonest words in English. Very few persons have a vocabulary of over ten thousand words in a foreign language; hence 43, or nearly half of the test words, are mere "passengers"; they add nothing to the efficiency of the test.

THE SPECIAL PROBLEM OF MEASURING VOCABULARY IN A FOREIGN LANGUAGE.

It is in one respect much easier to measure vocabulary in a foreign language than in the mother-tongue, because there is no difficulty in the matter of definition. To define a word is not easy, and the easier the word, the more difficult it is to define⁶. Definition is used by Binet as a test of Intelligence;—and it is generally considered a very good test, and therefore a very bad test for the present purpose. But in the case of a foreign language we can ask the children to translate instead of defining, while they still retain the option of explain-

¹ Terman, L., Condensed Guide for the Stanford Revision of the Binet-Simon Tests, 1920, page 31.

² Journal of Educational Psychology, XIII/6, Sept. 1922.

³ Weeks, A., Journal of Educational Psychology, XII/9, Dec. 1921.

⁴ Terman, L., Measurement of Intelligence, 1919, page 230.

⁵ See below for an explanation of the nature of this book.

⁶ "The indefinable is the indisputable." Chesterton, G. K., "Charles Dickens," 6th Edition, 1910, pages 1-2.

ing or illustrating the meaning,—which, in the case of the mother-tongue, were their only means of indicating their knowledge. Thorndike's laborious system of initial letters or synonyms is therefore rendered unnecessary, as are also Terman's individual testing, and Whipple's Check Test¹. The greatest of the difficulties experienced in measuring the vocabulary of the mother-tongue is thus absent when we measure the vocabulary of a foreign language.

Certain difficulties are common however to both problems—those arising from Boredom, and Copying. In order to secure a reasonably accurate measure it is necessary to take the meanings of a fairly large number of words. To indicate the meanings of a large number of words is tiresome and laborious, and the child becomes bored with the task.

A second difficulty arises from Copying. As there is no speed limit in a Vocabulary test and the answers are short, it is very easy for one pupil to copy from another. Unless the physical conditions are favourable (which they rarely are in the East), it is not possible entirely to prevent copying by spacing of the students. Where there is boredom, copying is specially likely to occur.

One other difficulty, though not peculiar to this problem, is specially felt in dealing with it, namely the Multiplication of Error. All Vocabulary tests are samplings. Those Vocabulary tests which endeavour to estimate the total number of words in a child's vocabulary involve multiplication by a factor, *e.g.*, 180. Thus a child may know one word only, and yet score 180: he may know 179 words (or more), but if his words chance to fall outside the list, he may yet score zero. It is assumed that such errors cancel out, and probably they do so in the mean score of a group test of the mother-tongue.

In the measurement of a large vocabulary, *e.g.*, 10,000 words an error of 180 is trivial,—a matter of less than 2 per cent., but in the measurement of small vocabularies such as have to be dealt with in a foreign language, an error of 180 is a very large matter: thus in a Bengali Class III (age 9) it will be an error of over 100 per cent.

' TESTS USED.

Our first attempt to measure the English Vocabulary of Bengali boys followed the lines of Henmon. Words were

¹ Whipple, G. M., *Manual of Mental and Physical Tests*, 1921, page 677.

selected at regular intervals from all the English readers in common use in the schools in Class III. Duplicates were eliminated and the list was reduced by a second selection to 100 words. Alternate words were taken from this and formed into two half tests. Bengali words were selected at random from the dictionary, rare words being rejected. In this way each English word was supplied with its real meaning and three false meanings¹. The boys were required to draw a line through the correct meaning. The test was corrected with a stencil.

It was found that the correlation of the two halves was low, ranging from 0.3 to 0.7. This appeared to be due to boredom, as 250 words had to be read in each part and the boys tested were young,—age 8-10. Moreover Class III is so ill-graded in many schools in respect of English that there were many "undistributed maximum"² scores. The establishment of norms for the test was abandoned, though the use of it was continued as a Before and After test in Practice classes, as it has the advantage of yielding a score in cases where all other measures show zero or an unreliable minimum.

The Terman test was applied to the M.A. class in the University of Dacca as a group test, also to a few Matriculation Classes (Class X), but it was evident that it was unsuitable as a test of a foreign language save in the highest grades.

FREQUENCY LISTS.

It appeared therefore that this method of chance sampling from an almost unlimited vocabulary would not be successful in the measurement of a foreign language; as regards selection of words the limited sampling of the first test was more successful, though very restricted in its range. The idea then occurred of making use of Word-frequency lists as a means of building up a Vocabulary test which might have a reasonably wide range, but be at each point a sampling from only a small number of words. It would thus be possible to arrange the test so that in the lower stages there would be larger samplings, and thus the smaller the vocabulary tested, the lower would be the multiplication factor. (If Table 61, below, be seen this point will be made clear). Moreover by grading the test in order of increasing difficulty it might be possible to save the

¹ Example.—*Caf.*, jol (water), bari (house), hiral (cat), komol (lotus).

² See Glossary, "Undistributed Scores," also Thorndike, E. L., *Mental and Social Measurements*, 1919, page 22.

time both of the most junior classes by omitting the latter part of the list which they are sure not to know, and of the most senior classes by omitting the former part of the test in which all the words will certainly be familiar to them.

These Word-frequency lists, showing the commoner words of the English language with index numbers of their relative frequency in the material studied, were designed in the first instance mainly with a view to the selection of words for the teaching of spelling. A tabular statement of the main lists of this kind is shown below. The most recent bibliography of such lists is contained in Dewey's "Relative Frequency of English Speech Sounds" page 3.

Name of Compiler and date.	Number of words tabulated.	Number of words in List.	Sources of words.
Eldridge, 1911 . . .	43,989	6,002	Newspapers.
Ayres, 1913 . . .	23,629	2,001	Business letters.
Jones, 1913 . . .	— ¹	4,532	Essays of pupils, Grade II-VIII.
Cook-O'Shea, 1914 . .	200,000	5,200	Family correspondence.
Starch, 1916 . . .	40,000	5,903	Magazines.
Anderson, 1917 . . .	360,000	3,087	Business and private correspondence.
Thorndike, 1921 . .	625,000	..	Children's classics.
	300,000	..	Bible and English classics.
	300,000	..	Elementary School Texts.
	50,000	..	Technical.
	90,000	..	Newspaper.
	500,000	..	Correspondence.
	1,865,000	10,000	
Dewey, 1923 . . .	100,000	1,131	Twenty sources, 5 per cent. from each.

TABLE 60.—Word-frequency Lists.

¹ This list is of different construction from the others noted. The essays were specially written, and the words are classified according to the grade in which they are first used.

The most valuable of these lists for our purpose is that of Thorndike. This List is criticised by Dewey¹ as defective in the order of the first few words; it has however the very great advantage of being by far the most extensive, and for our purpose such errors as those pointed out by Dewey, involving as they do a difference of only $1\frac{1}{2}$ per cent. in the credit-index are quite immaterial.

Two tests² were devised, both based on the Thorndike Teachers' Word Book³. The first test was devised with the idea of reducing the length and increasing the fineness of the actual test by a preliminary grading to indicate the approximate number of words known by each individual: the finer grading could then be determined by applying a relevant portion only of the second test. Thus if the first test indicated the boy's vocabulary to be in the neighbourhood of 200 words he might subsequently be tested with a larger sampling than that of the first test but ranging only from 0 to 400. By this means it was hoped to reduce the multiplication of error, and to minimise the danger of boredom.

A test was constructed consisting of one word from the first, second, third, fourth and fifth hundred⁴, two from the second five-hundred, two from the second and subsequent thousands up to the tenth. This was the Preliminary Test, containing 25 words in all. The detailed test (containing seventy words) consisted of four words from the first, second, third, fourth and fifth hundred, five from the second five-hundred, and five from each subsequent thousand.

The test was used with only a few classes before it was abandoned. The basic idea appears to be sound, especially for accurate testing of individuals, but the preliminary test should consist of seventy words and the second test of at least 210, or more, of which 70 may be marked for each person tested, and there should be a third test to duplicate the work of the second.

This would give a very accurate determination for an individual case, but for a group average it appeared to be unnecessarily elaborate. It appeared from the preliminary trials that a seventy word test did not cause undue boredom. The most satisfactory course for the particular purpose seemed to be to have two tests each of seventy words, and to take the

¹ Dewey, G., "Relative Frequency of English Speech Sounds," 1923, page 5.

² With H. C. Bannerjee.

³ Thorndike, E. L., *The Teacher's Word Book*, 1921.

⁴ These refer to the order of words (in respect of commonness) in the Thorndike Word Book.

mean score. It was then possible, from the correlation of the two halves to estimate the validity of the scores thus obtained, not as regards individuals but as a Group Survey. Further by splitting the test into two halves, by distributing them alternately, and giving the other half to a student only when he stood after completing his first paper, copying was rendered impossible.

The final form of the test and the method of scoring is shown below :—

From each	from—to—(in the Thorndike Word Book)	words were selected.	each word scor- ing points.
(words)	(order)	(words)	(points).
100 . . .	0—500	4	25
500 . . .	501—1,000	5	100
1,000 . . .	1,001—10,000	5	200
Words in each part, 70 ; Total 140.			

TABLE 61.—The structure of the final English Vocabulary Test for Bengalis.

The details of the procedure used were as follows :—

1. Spacing and pencils as usual.
2. The teacher distributed the papers alternately, beginning each successive row with a different sheet (so that Part I might not be behind Part I).
3. (a) The children wrote their names.
3. (b) The teacher read the directions :—“ Write the Bengali of the English words given below. If you cannot think of the right word to show the meaning, you may explain by an example. Do not guess. If you do not know any word, put a cross, X. Stand when you have finished and I will give you the other half.” (The directions were in Bengali). Simultaneously with the reading of the directions, examples were shown on the black-board :—

“ above . . . upore.
 boy . . . chele.
 add . . . e.g., $2+2=4$.
 dark . . . dekha jay na (you cannot see).
 trypanosome . . . X ”

3. (c) The teacher said, "Now begin" (This was said quietly and in a careless manner, so as to dispel the idea of a speed test).

Boys who wrote English were told not to do so by the supervisors. Boys whose mother-tongue was not Bengali were told to write in their mother-tongue. Their papers were not marked or tabulated.

4. As soon as a boy stood, the supervisor collected his paper and gave him the other half (after initialling it, in order to know later that the paper handed in was the final half), and said to the boy "Write your name—there; and go on."

In the case of Intermediate and Graduate classes the first 25 words were deleted and the students were credited as knowing these words.

In one case the score of Section B¹ of the class has been substituted for the Section A score in a school as there was a suspicion that the boys in the first section tested did not try their hardest. The two sections of the class were in the opinion of the headmaster of equal ability in school work.

Eight hundred cases were tested. The correlation of Part I with Part II is $r\ 0\ 91$, P.E. 0041; or, taking the school classes only (X-to-III) $r\ 0\ 96$, P.E. 0023 (664 cases).

The results of the test in a good, an average and a weak school are shown, also the mean of the three sets of scores as a composite norm.

¹ When the number of boys in a class exceeds the number permitted by the departmental regulations (or those of the Calcutta University), the class is divided into sections. The boys in the sections are ordinarily selected so that the two sections may be of approximately equal educational ability. In this test Section A was tested in every case, save as noted above.

Class.	Score, (Mean number of words known).	Improvement on previous year.	Percent- age of improve- ment.	Score.	Improve- ment.	Per cent.	Com- posite (Mean of the means).	Improve- ment.	Percent- age of improve- ment.	Total Cases.
B. T. Class	8720	..	..	..	..	..	..	..	..	34
B. A., 1st year	7307	..	..	..	..	..	..	..	..	51
Intermediate 1st year.	6393	..	..	..	..	..	..	..	..	51
Schools	Govern- ment.	..	..	..	..	..	..	..	..	..
Class X	5884	1482	33.7	An average non-Govt. School. 4862	1773	57.1	5045	1259	33.3	76
Class IX	4402	909	26.0	3080*	762	32.8	3786	1186	45.6	63
Class VIII	3493	1198	52.2	2327	296	14.6	2600	605	30.3	82
Class VII	2295	1098	91.7	2331	995	96.0	1995	946	90.2	95
Class VI	1197	190	18.9	1036	295	39.8	1049	189	19.1	85
Class V	1007	635	170.7	741	377	103.6	881	492	126.5	85
Class IV	372	156	72.2	364	273	360.0	389	236	154.2	80
Class III	216	..	..	91	..	..	163	..	..	98
TOTAL	.	..	..	..	..	..	..	..	..	800

* Section B of the Class. The mean score of Section A was 2760 in the first trial, 3203 in the second trial.
 † Selected, Section A scored 1072, Section B (first trial), 1162. The original is shown.

TABLE 62.—The Number of English words known by Bengali boys (and students) at various stages.

The table given below shows the size of vocabulary of English-speaking children as estimated by various observers in children of various ages.

Age (years and decimals of a year).	Vocabulary (Number of words).	Investigator.	Age (years and decimals of a year).	Vocabulary (Number of words).	Investigator.
2.0	215	Tracy. ¹	1.3	235	Kirkpatrick. ⁴
2.7	642	Salisbury. ²	2.8	405	"
5.5	1,528	"	3.8	700	"
6.5	2,500	Terman and Childs. ³			
7.5	2,600	"	8.5 ⁴	4,480	Kirkpatrick. ⁵
8.5	3,060	"	9.0	6,020	"
9.5	5,000	"	10.7	7,020	"
10.0	6,000	"	11.8	7,860	"
11.5	6,100	"	12.8	8,700	"
12.5	7,700	"	18.0	10,660	"
13	8,800	"	15	12,000	"

TABLE 63.—The English Vocabulary of English-speaking children at various ages.

The age-grade correspondence of Bengali students in respect of English vocabulary with children whose mother-tongue is English, is shown below. It is to be observed that the ages stated for Bengali boys are theoretical, *viz.*, normal ages of the class.

Grade.	BENGALI STUDENTS.		ENGLISH CHILDREN.	
	Age.	Vocabulary.	Vocabulary.	Age.
Inter 1st year . . .	17	6,393	6,100	11.5
Class—				
X	16	5,045	5,000	9.5
IX	15	3,786	3,960	8.5

¹ Tracy, F., *Psychology of Childhood*, 1903, page 142-3, cases Nos. 13—27 averaged.

² Salisbury, *Educational Review*, VII, page 287, Sandiford, P. *Mental and Physical Life of School Children*, 1913, page 820.

³ Terman, L. M. and Childs, H. G., *Journal of Educational Psychology*, 3, 1912, page 198.

⁴ Kirkpatrick, E. A., *Fundamentals of Child Study*, 1911, page 236.

⁵ Kirkpatrick, E. A., *Popular Science Monthly*, 70, 1907, page 157
Whipple, G. M., *Manual of Mental and Physical Tests*, 1921, page 678.

⁶ These ages are converted from grades by the table in McCall, W. *How to Measure in Education*, 1922, page 34.

Grade.	BENGALI STUDENTS.		ENGLISH CHILDREN.	
	Age.	Vocabulary.	Vocabulary.	Age.
<i>Class—contd.</i>				
VIII	14	2,600	2,600	7.5
VII	13	1,995	..	..
			1,528	5.6
VI	12	1,049	..	..
V	11	881	..	..
			700	3.8
IV	10	389	405	2.8
	..	..	215	2.0
III	9	153	..	..

TABLE 64.—Comparison of Bengali boys and English children in respect of English vocabulary.

The comparison of B.A. and B.T. class results is not shown in the table: they would actually numerically correspond to English age 12.5 (B.A. 7307: Age norm, 7700) and age 13 (B.T. 8720: Age norm, 8800) respectively.

THE RATE OF LEARNING REQUIRED.

The mean number of words added to the reading vocabulary in one year in the best school in Dacca is 735.5; in the two non-Government schools tested 578.2 words.

From the table below it will be seen that for a Bengali boy at any point to equal in vocabulary the English boy of his age it would be necessary for him to learn at, at least, three times the present rate of the best school. At its present rate of progress the best Government school (dealing with the children of the upper classes, in many of whose homes English is read and spoken) may hope to bring its Matriculation class boys in respect of English vocabulary to a point about $5\frac{1}{2}$ years behind the English child of the same age, whereas the boy of the non-Government school will be $6\frac{1}{2}$ years behind. On the average (taking the boys of all the classes) a Bengali boy will be from $6\frac{1}{2}$ to $9\frac{1}{2}$ years behind an English boy of the corresponding age (see Table 65).

English boy's.	1		2		3		4		5		6	
	Bengali age.	English words.	Bengali age.	English words.	Bengali age.	English words.	Bengali age.	English words.	Bengali age.	English words.	Bengali age.	English words.
9-5	9-5	3000	10-5	2500	11-5	1667	12-5	1250	13	1111	14	909
10-5	10-5	3000	11-5	2000	12-5	1500	13	1333	14	1090	15	923
11-5	11-5	2033	12-5	1525	13	1356	14	1109	15	938	16	813
12-5	12-5	1925	13	1711	14	1400	15	1185	16	1027	17	908
13-5	13-5	1956	14	1600	15	1354	16	1173	17	1035	18	926
14-5	14-5	1938	15	1640	16	1421	17	1254	18	1192	19	1015
15-5	15-5	1846	16	1600	17	1412	18	1263	19	1143	20	1043
Mean Rate of words per annum.	Level.	One year behind.		1½-2 years behind.		2½-3 years behind.		3½ years behind.		4½ years behind.		
	2328	1797		1114		1223		1067		984		
Bengali age.	7		8		9		10		11		12	
	English words.	Bengali age.	English words.	Bengali age.	English words.	Bengali age.	English words.	Bengali age.	English words.	Bengali age.	English words.	
15	769	16	667	17	588	18	526	19	476	20	435	
16	800	17	706	18	632	19	571	20	522	21	480	
17	718	18	642	19	581	20	530	21	488	22	452	
18	810	19	733	20	670	21	616	22	570	23	531	
19	838	20	765	21	704	22	652	23	607	24	568	
20	927	21	863	22	790	23	735	24	688	25	646	
21	960	22	880	23	828	24	774	25	727	26	686	
5½ years behind.	832	6½ year behind.		7½ years behind.		8½ years behind.		9½ years behind.		10½ years behind.		
		746		685		629		582		543		

TABLE 65.—A Bengali boy beginning English at 8½ years would have learnt X English words per annum in order to equal an English boy's vocabulary-age A at his (the Bengali boy's) age B.

THE MINIMUM USEFUL VOCABULARY.

The statement that the boy of the Matriculation class in Bengal has a vocabulary of 5,000 English words in itself means no more than a statement that he has scored 5,000 marks in the test: the test marks have no meaning save in so far as they enable us to make comparison with an Age — or Grade-norm.¹ A score in terms of number of words will however possess an independent meaning (apart from age or grade comparison) if we are able to state what these words enable their possessor to do. The Calcutta University Commission's Report² insists that the public should enquire, "What is the meaning of a University degree? What does it mean that its possessor can do?" We are entitled to ask the same question of every examination and every test. So in this case we are to enquire "What does a vocabulary of 5,000 English words enable its possessor to do?" Since Reading is the subject of discussion, this question means "What does this vocabulary enable him to read?"

The special value of the question lies in its converse, that is in the determination of minimum standards of progress. We have seen that a large number of Bengali boys leave school prematurely, and have discussed the Surrender Value³ of subjects thus prematurely discontinued: we have therefore to enquire, "What minimum vocabulary will enable a boy, who leaves school prematurely, to continue to read English books with reasonable ease and enjoyment?" and "Does the existing vocabulary-achievement of the school accomplish this purpose?" "Does it yield any permanent 'Surrender Value?'"

By the words "reasonable ease and enjoyment" is meant in this context such a degree of resulting pleasure as would render it likely that the boy would continue his studies after leaving school. The opposite of "ease and enjoyment" in reading a foreign language is having to look up a large number of words in the dictionary:⁴ hence we may define "ease"

¹ Unless, of course, they are being used for individual comparison: but this is not an Individual Test.

² Calcutta University Commission Report, II, 156.

³ Chapter 5 above.

⁴ We are here concerned with Vocabulary. It is certainly conceivable that a boy might know every word in the page, yet be baffled by the syntax. But, in general, difficulty of syntax and difficulty of vocabulary go together. In simplifying books for the use of children or students of a foreign language (see the discussion below of books "Simplified for Indian Students") incidental difficulties of syntax are readily eliminated.

in terms of the number of words per page which a boy would have to look up in a dictionary; five or six such words per page would probably be the limit compatible with enjoyment. In order to compare books of varying type and spacing, we may define a page as 200 words.

As a sample investigation¹ the vocabulary of the Matriculation class may be considered:—"What English books does a vocabulary of 5,000 words enable their possessor to read with ease and enjoyment?" and "Is such a vocabulary sufficient to yield any Surrender Value in English to the boy who goes no further than the end of the High School course?"

(An examination was made of one page in every hundred pages, the minimum examined being 2 pages, and the maximum 5 pages. In every case 200 words are taken as a page.)

		Words per page outside a Class X boy's Vocabulary.
A. L. Series ²	Snowdrop (Grade I)	0
" "	Fairy Stories from the Eskimos (Grade II)	0.5
	The Mad Tailor	2.0
G. A. Henty	Redskin and Cow-boy	3.0
" "	The Dragon and the Raven	4.5
Andrew Lang	The Violet Fairy Book	4.8
Charles Marryat	Mr. Midshipman Easy	7.0
" Kingsley	Westward Ho	7.0
A. Dumas	The Count of Monte Cristo	7.2
W. M. Thackeray	Henry Esmond	8.5
Mrs. Craik	John Halifax Gentleman	8.8
R. L. Stevenson	Treasure Island	9.0
Jules Verne	20,000 leagues under the sea	9.0
A. L. Series, Senior	Windsor Castle	9.5
" Grade V	Two years before the mast	11.0
" " IV	Cook's Voyages	11.0
Arnold Bennet	Mr. Prohack	11.3
A. L. Series, Senior	The Tower of London	12.3
Rudyard Kipling	The Jungle Book	13.0

¹ With Sishu K. Pal.

² A popular series of books edited for English children, the A. L. Bright Story Readers, E. Arnold & Co.

		Words per page outside a Class X boy's Vocabulary.
Charles Dickens	Nicholas Nickleby	13.4
A. L. Series, Grade VI	The Prairie	14.0

TABLE 66.—The average number of words per page (in various books) which are outside the 5,000 commonest words, as shown in the Thorndike Teachers' Word Book.

It appears from the above that with 5,000 words one can read Fairy Tales. and Henty; but Marryat, Kingsley and Dumas would be read with difficulty, while *Esmond*, *John Halifax*, *Treasure Island* and *20,000 Leagues under the Sea* would be an unpleasant task, for one would have to look up a word nearly every other line. A vocabulary of 5,000 words in the English mother-tongue is that of a child of $9\frac{1}{2}$; thus the vocabulary and the type of literature appear to correspond fairly closely.

But there is more to be said on this point.

THE AGE DISCREPANCY IN VOCABULARY.

In the life of Sanderson of Oundle¹ an experiment is mentioned aiming at encouraging boys, especially of scientific or

¹ "Lastly came the essentially Sandersonian and revolutionary idea.The purpose of learning living tongues was to give access to and mastery of "live" books, books of racial and social development; books of advanced and progressive thought..... The method to be adopted was that of the co-operative Library work already in full swing with History and English. A noble building must arise with at least one wing sumptuously equipped as a modern language "House" in the New Atlantis sense: a literary research laboratory devoted to the abstraction and collection of the writings of the great foreign Men of Service.

"There would always be boys of real literary and linguistic aptitude whose tastes would lie in the direction of the study of language for its own sake. These should have as free a course in the older methods and ways as the others in the new. The "House" would be primarily intended for those boys—in a majority at Oundle—whose minds were of a scientific or historical bent.

"Sanderson admitted that the age of commencement must be much later than with English work and that a younger boy must be initiated to the Library habit by means of first arousing his interest in books which he can tackle. For this purpose a large number of popular stories of adventure, tales of the war, travel books, and fairy tales and magazines were obtained, and nearly every boy of middle school development was given a period weekly for unrestricted reading therein. A room was improvised specially for this purpose as awaiting the Temple or "House" to come later. At the same time the "live" books were imported from the Library into this room, and a start was made with two or three classes of older boys of scientific and engineering turn of mind in a work of historical economical character."—Anon., *Sanderson of Oundle*, 1923, page 103.

historical bent, to obtain a reading-knowledge of foreign languages. The writer visited Oundle and by the courtesy and help of the headmaster (Dr. Fisher), of Mr. G. H. Evans, Mr. A. C. Brag and Mr. C. E. Stockton, was enabled to make enquiries as to the working of this experiment. The experiment had then (September 1923) been discontinued. The main difficulty seems to have been that books which are easy enough for a boy to read without exasperatingly frequent reference to the dictionary are books written for native children (*viz.*, native in that foreign language) of very much lower age. Thus the French book which an English boy of sixteen can read with reasonable fluency is one which was written probably for a French child of ten; hence its content is too juvenile to be of great interest. If on the contrary books suitable in respect of content be provided, they are too difficult in respect of vocabulary.

In order to interest anyone in the reading of a foreign language, it is necessary to provide him with material which is suited to his intelligence as well as to his vocabulary. This can be achieved as regards the ordinary books written in the foreign language only if the vocabulary of the student at the given age is equal to that of the native child at the same age. We have shown in Table 65 that it is almost impossible to achieve this for the Bengali boy, at any rate under present conditions. It follows therefore that if the foreign boy is unable to achieve age for age equality with the native boy in vocabulary, and if he is confined for his reading to the literature of the foreign language written for native boys, he will for ever be condemned to read matter which is greatly below his mental age. Thus we have shown in the present instance that the only book which the Bengali matriculate (age 16) can read without having to look up words is *Snowdrop* (suitable for age 5 or 6) that the only books he can read with any ease are those suitable for English boys of age 9 or 10, a difference of 6-7 years. Approaching the matter from a different point of view we have calculated in Table 65 above that the discrepancy between Ago and English vocabulary is, in Bengalis, likely to be from 6½ to 9½ years.

Since literature suitable for Bengali boys is not to be found at present in the English language, the only alternative is to compose or edit literature specially, a literature suitable in

respect of its substance to an English or Bengali boy of 16 written in a vocabulary of the size of that of an English boy of 9½ — and similarly at the other stages of the Bengali boy's progress in his study of the English language.

This task would be very difficult but for the word-frequency list. In test-work the Thorndike Word Book was used in order to indicate what words a Bengali boy is most likely to have met with. Now the words met most often are the commonest words, and the commonest words are the most useful words. It would be possible that of two persons, A and B, each possessing a vocabulary of five thousand words, A might be able to read fairy tales and (with some dictionary work) Henty, whereas B might be able to read nothing at all. It is clear that one cannot get very far in the reading of English if one does not possess (we select at random from the first 500 commonest words) such words as *A — am — and — become — because — big — can — come — child — day — do*, etc. Such words are of great utility and each one confers a very large unit of Reading power. Whereas the possession of 5,000 such words as the following is almost useless in itself:—*abdomen — abridge — calomel — candidacy — catnip — dandruff — davenport*, etc. These are extreme cases, but it will be realised from a study of the statement, given in Chapter 9 below (Table 70), of the “Criteria of Reading-books” that judging from the haphazard construction of the vocabularies of existing reading-books, it is probable that most Bengali boys who possess a vocabulary of five thousand words include amongst those five thousand a very fairly large number of words which are mere “passengers,”—such as (selecting from Reading Series of which the criteria are studied in Chapter 9) “*Mausoleum*” “*Lore*,” “*Canopy*,” words which can very rarely be of any use to them. In our calculations above (Table 66) of the number of unknown words in various story books, we have taken as our standard the first five thousand words of Thorndike's List, whereas probably no foreign boy has a vocabulary so well selected. Even if we set out to teach these actual words and as few others as possible, there would inevitably be some amount of “Scatter” because the exigencies of plot make certain words inevitable, *e.g.*, “*Musk*” in the story of the birth of Akbar, “*petroleum*” in an essay on Motor-cars or on Burma; but the nearer we keep to the actual standard, the greater the utility of the vocabulary taught.

The actual amount of 'Scatter' in the vocabulary of the 664 school boys tested in Dacca is shown below.

	Class III per cent.	Class IV per cent.	Class V per cent.	Class VI per cent.	Class VII per cent.	Class VIII per cent.	Class IX per cent.	Class X per cent.
First 100 . .	23.8	..	..	..	..	..	..	..
Second 100 . .	25.6	51.2	..	..	..	..	..	..
Third 100 . .	11.0	..	48.7	43.5	24.2	18.7	13.3	10.0
Fourth 100 . .	6.9	11.8	..	..	..	..	..	..
Fifth 100 . .	9.5	10.9	..	..	..	..	..	..
501—1,000 . .	20.1	10.1	26.6	27.0	21.6	17.5	12.8	9.8
2nd 1,000 . .	2.2	5.7	13.3	17.4	24.8	23.4	20.4	15.1
3rd 1,000 . .	..	1.0	6.9	8.6	14.0	15.1	15.1	14.6
4th 1,000 . .	..	.3	.3	1.2	5.3	7.5	11.1	11.8
5th 1,000 . .	..	..	.1	.2	1.7	3.0	8.0	9.6
6th 1,000 . .	..	..	.3	.2	2.3	4.2	5.6	7.8
7th 1,000 . .	..	..	.7	.4	3.4	5.8	5.4	7.1
8th 1,000 . .	..	..	.1	.1	1.2	2.1	4.6	5.5
9th 1,000 . .	..	..	1.1	.3	1.2	1.8	1.7	2.6
10th 1,000 . .	..	..	..	1	.4	.9	1.9	2.2
Per cent. words outside the Norm.	50.6	37.0	24.8	28.5	29.5	25.3	27.3	26.0

TABLE 67.—The Amount of 'Scatter' in the English vocabulary of Bengali boys.

[Read.—Of the words known by Class III, 23.8 per cent. were among the first 100 commonest words, 25.6 per cent. amongst the second 100, etc., 50.6 per cent. were not included in the first 200 words of the Thorndike Word book (the approximate norm of the class being 200 words) and were thus of less than maximum possible utility. The approximate class norms are indicated by a line. The exact norms will be found in Table 62.]

The table shows that of the words known by Class III 50.6 per cent. are of less than maximum utility: of those known by Class X 26.0 per cent. are of less than maximum utility:—that is, the boys of Class X will have to learn some 1,300 additional words in order that their vocabulary may be of the same practical utility as the first 5,000 words of the Thorndike list, or in order that they may be able to read books written for them on the assumption that they know these first 5,000 words.

If the boys of a class can be put in possession of a vocabulary of five thousand English words so selected as to be of maximum utility, and if we know what those words are, it will be possible for us to smooth their path very considerably. For we can edit or compose matter for the reading of these boys, knowing precisely and showing precisely how far we are going outside their existing word-knowledge.¹ Moreover in their leisure reading, in matter which is intended for revision or for reading practice rather than for extension of vocabulary, we can avoid going outside their existing vocabulary at all, and so provide books which can be read in an armchair; and we can thus create that sense of achievement and that pleasure in the literature which is the greatest of all incentives to further progress. The better the list—that is, the more useful each individual word—the greater will be the variety of matter which we shall thus be able to provide. Moreover if this can be done with 5,000 words, it can be done also with any standard of vocabulary; we may fix a standard list of 1,000, 2,000, 3,000, 4,000 words and write books which contain no words (or practically no words) outside the limits of those lists. In the Supplementary Reading-books following the Book II of the series of Reading-books constructed for practice classes (see Chapter 9) four stories are provided, with a total of some 10,000—12,000 words in all, and the vocabulary of Books I and II, a total of only 444 different words, is used in these stories with no additions.

There is in India a very large output of English books “abridged and simplified for Indian students.” The production of such books is a most valuable and important work: and this is fully emphasised by the Calcutta University Commission’s Report. The Report even goes so far as to suggest a subsidy:—“We would suggest that in order to meet the very real need of poor students the University might issue a series of books, without notes or with very few, published at a few annas

¹ This could, of course, be done given *any* list of 5,000 words, so long as they were reasonably selected, but an actual frequency list is necessary, in so far as it is valid and based on a sufficient count, an ideal selection. In foreign languages in which no such Frequency Lists exist, it would be better to make one than to trust to mere judgment, though nothing so elaborate would be required as the lists referred to in Table 60. For example, a list has been made for Bengali by Probodh Deb Choudhury and has been used in connection with the construction of materials for teaching reading to Zenana women in Dacca. In this case the count was only of 11,000 words and the material used for the count was that type of material which it was intended to use in the reading-books, viz., fables and fairy-tales. There are some actual advantages in this limited or specific type of word frequency list.

each, not intended for University examinations, but for self-teaching of English, and of other things, the price being fixed at the number of annas necessary to pay the bare cost of publication. We hope that each student might buy a number of such books. Possibly such a series might even be subsidised We believe that such a series if well selected so as to offer attractive and varied reading to the students would be more effective in training them in the mastery and knowledge of the English language and of Western ideas than many hundreds of the formal lectures in English literature of the kind now in vogue."¹

Such books are already produced in appreciable numbers without subsidy: if they are not produced in larger numbers it is because they do not sell well,—save those few which have the good fortune to be adopted as textbooks for examinations. If they do not sell well, it must be because the Indian student derives no pleasure or profit from them. And if this be the case, we are not surprised.

It will be observed that the most difficult book in the list of books given above (Table 66) is one of the A.L. series, which is supposed to be condensed and “*simplified*” for children; that *Windsor Castle*, *Two years before the mast*, and *Cook’s voyages* in this same series are in point of vocabulary more difficult than *Treasure Island* in the original, that *The Prairie* in this series is in respect of vocabulary more difficult than an un-“*simplified*” book of Dickens, Arnold Bennet, or Kipling. There is nothing particularly difficult in the ideas of *The Prairie*, or *Windsor Castle*, or *Cook’s Voyages*, nor is their style so sacred that a word may not be altered here and there. If then these books have been “*simplified*” (as regards vocabulary at any rate) we may justly enquire—In what did this simplification consist?—Yet since these books are intended primarily for English children, in whose case vocabulary is of less importance, the editors may perhaps be pardoned. The case of the Indian “*simplifications*” is less pardonable.

We have collected fifteen such books at random by various authors issued by various publishers. We have only selected books which bear on the cover or title page the words “*Abridged and simplified for Indian students*” or the words “*Retold for Indian students.*” They are all much the same and it will suffice to quote from a single example.

¹ Calcutta University Commission Report. V, page 45.

“The Cloister and the Hearth, Re-told for Indian Students.”

Words outside the first 5,000 words of the Thorndike Word Book:—

Page 51.		Page 100.		Page 151.	
panic . . .	7,700	suspicious . . .	5,800	unsteady . . .	8,700
determination . . .	6,300	disables . . .	zero	title-deeds . . .	zero
presently . . .	6,300	bolster . . .	7,700	granddaughter . . .	6,000
bewildered . . .	7,700	abbot . . .	6,300	defray . . .	zero
composure . . .	7,700	snore . . .	5,800	rightful . . .	6,000
		scuffle . . .	zero	penitent . . .	6,300
		presently . . .	6,300	angel (coin) . . .	zero
		crossbow . . .	zero	avarice . . .	5,800
				withheld . . .	6,300
				dishonesty . . .	6,000
				burgomaster . . .	zero
				vicar . . .	7,700
				competition . . .	5,300
				perplexity . . .	8,700
				dispatch . . .	6,000
				trusty . . .	6,900
				couriers . . .	zero

The number against each word in the list above shows the position of the word in order of commonness, thus “panic” is approximately 7700th in order of frequency of occurrence: “zero” means that the word does not occur among the first 10,000 commonest words.

It may be argued that the use of these words is unavoidable; words often appear to be unavoidable until one actually commences to re-write: and then it is found that there is very little difficulty at all in avoiding them. The words “Burgomaster” and “Vicar” are perhaps the only two which are difficult to replace since they are in the nature of proper names.

In the paragraph below, re-written from page 151, ten of these words have been removed: the passage is otherwise unaltered and every word used is within the 5,000 list.

“Two boxes were brought in. As he undid them his fingers trembled: he brought out the papers of a property at Tergou. “This land and these houses belonged to Floris Brandt, and do belong to you of right, my child,” he said to Margaret, “I took these for a debt which has long since been paid off. I now restore them to their true owner with tears. I am indeed sorry for what I have done. In this other box there are three hundred and forty gold coins..... I have kept account, meaning to be just some day; but my love of money prevented me. Pray, good people, against temptation. I was born honest,—yet you see,” etc.

Actually there are one or two other minor difficulties which might also be removed, *e.g.*, “do belong” “of right” “restore” although the above words come within the 5,000 word list.

Practically any non-technical matter can be written within the 5,000 words after very little alteration. Any simple narrative which does not contain too much local colour and has a strong plot can be written within 2,500 or even 1,000. This point is elaborated because it is of fundamental importance.

We will take another selection from a book so "simplified for Indian students" and re-write it with the first 5,000, 2,500 and 1,000 commonest words. At the latter figure, the task becomes difficult, and no one would probably ever attempt to write this particular book (*The Vicar of Wakefield*) at so low a Vocabulary Index (the English vocabulary of a normal Bengali boy aged 11-12 years).

Original.

"Suddenly the appearance of Mr. Thornhill's equipage at a distance alarmed us all, but particularly increased the uneasiness of my eldest daughter, who, desirous of shunning her betrayer, returned to the house with her sister. In a few minutes he was alighted from his chariot and making up to the place where I was still sitting, inquired after my health with his usual air of familiarity. "Sir," replied I "your present assurance only serves to aggravate the bareness of your character, and there was a time when I would have chastised your insolence for presuming thus to appear before me, but now you are safe, for age has cooled my passions and my calling restrains them."—(*Vicar of Wakefield*, published by K. & J. Cooper, Bombay, for Indian students, page 101.)

Vocabulary Index, 5,000.

Suddenly the appearance of Mr. Thornhill's carriage at a distance alarmed us all, but particularly increased the uneasiness of my eldest daughter, who desiring to shun her betrayer, returned to the house with her sister. In a few minutes he had got down from his carriage and, coming up to the place where I was sitting asked after my health with his usual familiar air. "Sir," replied I, "your present assurance only serves to make your character seem more base; and there was a time when I would have punished you for presuming thus to appear before me. But now you are safe, for age has cooled my passions, and my calling restrains them."

Vocabulary Index. 2,500.

Suddenly the appearance of Mr. Thornhill's carriage at a distance alarmed us all but particularly did it increase the distress of my daughter, who desiring to avoid meeting her betrayer returned to the house with her sister. In a few minutes he had got down from his carriage, and coming up to the place where I was still sitting, asked after my health with his usual familiar air. "Sir," replied I, "you only make your character seem more base by having the courage to visit me in this manner; and there was a time when I would have punished you for daring thus to appear before me. But now you are safe, for age has cooled my passions and my calling controls them."

Vocabulary Index. 1,000.

"Suddenly the sight of Mr. Thornhill at a distance made us afraid, but most of all it increased the pain of my daughter who, not wishing

to meet the man who had used her so ill, returned to the house with her sister. In a few minutes he had got down, and, coming up to the place where I was still sitting, asked after my health with his usual air, as of a friend. "Sir," replied I, "you only make yourself appear more in the wrong by daring to visit me in this manner; and there was a time when I would have beaten you for daring thus to appear before me. But now you are safe, for age has cooled my nature and my calling holds me in."

The three books below were taken at random from a shelf of novels:

Specimen pages showing the elimination of all words outside the first 5,000 words of the Thorndike Word Book.

MONTE CRISTO (Collins Clear Type), Vol. I, page 50.

1. A more perfect example of manly beauty could scarcely be imagined.

2. One more praised in the arts of great cities would have.....cast down her thickly fringed lashes so as to have concealed the liquid lustre of her bright eyes.

3. Immediately the bridal party came in sight of La Reserve, M. Morrel came forth to meet it.

4. He repeated the promise.....that Dantes should succeed M. Leclerc as captain.

5. Edmond on the approach of his patron respectfully placed the arm of his future wife within that of M. Morrel.

6. The slight stairs groaned as though alarmed at the unusual pressure.

7. Her words and looks seemed to inflict the direst torture on him for his lips became pale as death.

Words outside the first 5,000 eliminated.—1. Specimen, 2. animated, 3. cortege, 4. successor, 5. affianced, 6. structure, 7. ghastly.

JOHN HALIFAX, GENTLEMAN (Everyman Series), page 50.

1, 2, 3. He offered us—with a polite movement of the hand—one of the turnips he was gnawing.

4. John, out of a deeper courtesy than I can boast, accepted it.

5. It is mere fancy of mine. But I am not the first remarkable person who has.....

6, 7. But the elder and less agreeable of the two travellers pressed his companion's arm, indicating silence.

8. I will not betray our illustrious friend by mentioning his full name.

9, 10. He gave it (his name) to me, but I, Phineas Fletcher, shall copy his silence and shall not reveal it to the world.

11, 12. Its owner has carried up to the greatest height of fame always the gay and gentlemanly spirit.....

Words eliminated.—1. Gesture, 2. swede, 3. munching, 4. delicacy, 5. whim, 6, 7. interpose (with a nudge), 8. surname, 9. reticence, 10 indulge (it to the world), 11. topmost, 12. celebrity.

MR. PROHACK. (Arnold Bennet), page 50.

1, 2, 3. Children should always assume that their fathers have mysterious stores of money and that nothing is beyond their powers, and if they don't rise to every demand it's only because in their mysterious wisdom they deem it better not to. Or it may be merely because they are obstinate.

4, 5, 6, 7. Mr. Prohack shook his head in ample contentment. He had the same feeling of *creation* as he had had earlier with his son—a god-like feeling.

8. Her efforts to play the woman of the world with him were so funny and so touching.

9, 10. She was simply too tired and nervously exhausted to eat..... She did not know that her parents knew these details. The cook, to whom she revealed them, had told them later.

11, 12, 13, 14, 15. She had stuck to the task during a whole winter, sliding and slipping on the wood-paved or the tar-covered streets in the East End, and had met with but one accident, a small affair.

16, 17. Her mother had always objected to what she called the "incident" and showed only relief when it concluded, and had granted no merit for it.

Words eliminated.—1. resources, 2. inscrutable, 3. cussedness, 4. crest, 5. plenary, 6. sensation, 7. creativeness, 8. comic, 9. exasperated, 10. confidante, 11. skid, 12. asphalt, 13. slimy, 14. slithery, 15. minor, 16. episode, 17. awarded.

We shall endeavour to show in the next chapter that such selection and limitation of vocabulary serves as an important basic principle in the creation of Reading Power in a foreign language.

SUMMARY.

The measurement of vocabulary in a foreign language is relatively an easier task than in the mother-tongue. The only measurement of vocabulary in respect of a foreign language known to the author is that of Henmon, based on a selection of words from a number of school textbooks. In the mother-tongue various tests exist which yield statistical scores, but only two which supply what is required in this instance, namely, an estimate of the actual number of words known at different ages or stages of school and University life. These two tests, Kirkpatrick's and Terman's are not suitable for the measurement of the vocabulary of a foreign language.

The special difficulties experienced in measuring the vocabulary in a foreign language arise from Boredom, Copying and Multiplication of Error.

The first attempt to measure the English Vocabulary of Bengali boys in Dacca followed the lines of Henmon, as regards selection of

words; and the synonym method later used by Thorndike as regards indication of meaning. This test was abandoned because it showed unreliability due to boredom, owing to the large number of words presented in this method of response.

The second test (omitting an abortive experiment with Terman's list) adopted the method of written vernacular meanings, and consisted of a Preliminary Grading Test, and a second Detailed Test, a portion only of which was to be set in each case according to the result of the preliminary test. This method appears to be sound, but it is too complicated for the particular purpose, viz., a general estimate of the size of the vocabulary at various school grades, though excellent for an individual examination.

The third and final test consisted of two parts each containing seventy words, selected as in the previous test to represent various stages of the Thorndike Word List, and multiplied by factors corresponding to the percentage of the sampling. The two parts were distributed alternately to prevent copying. The test was applied to 800 cases, and the correlation of the two parts is high.

Comparing the results (i.e., the mean score of the two parts) with the data supplied by various studies of the English vocabulary of English children, it is found that at the Matriculation grade (age 16) the English vocabulary of a Bengali boy corresponds to that of an English boy aged 9½ years.

At the rate of progress in the acquisition of an English vocabulary revealed by this test, there must inevitably be an average discrepancy of from 6½ to 9½ years between the extent of the English vocabulary of an English and of a Bengali boy.

Mere "number of words" does not, however, convey much. We have to enquire what a given number of words enables their possessor to read. Examining this point we find that the Bengali boy of the Matriculation class would be able to read—without excessive difficulty in respect of vocabulary—books which would appeal to the English boy aged about nine or ten.

In this Age-discrepancy in vocabulary, viz., the fact that a student of a foreign language is condemned by the limitation of his vocabulary to read books greatly below his mental age as regards their substance, lies the fundamental difficulty in the problem of creating reading power in a foreign language.

If the words of the student's vocabulary are so selected as to be words of maximum frequency, and of maximum utility, the difficulty can be reduced. Furthermore if a known and standard vocabulary be built up in the school course, it will be possible to write books for practice and leisure reading in which the ingress of unfamiliar words is under strict control.

The Calcutta University Commission has emphasised the great importance and value of out-of-class reading, but the books at present provided, though nominally simplified, in respect of vocabulary do not show signs of any useful adaptation to the needs of the Indian students.

It is a comparatively easy matter to bring the vocabulary of any ordinary narrative matter, within the limits of a standard vocabulary, nor are the necessary alterations, very perceptible, save at the lowest vocabulary levels (1,000 words and under).

CHAPTER 9.

The Teaching of English Reading to Bengali boys.

The improvement of reading ability in a student who already possesses a fairly sufficient English vocabulary is a straight-forward problem, since we have as guidance the experience of various investigators to whom reference has already been made. But in the teaching of reading in a foreign language to beginners there is little or no guidance, for in almost all foreign language-teaching it is assumed that the power of speaking and writing the language are primary requisites, and the initial stages of the course are based on that assumption. The only exceptions which we have been able to discover are the experiment of Sanderson of Oundle,¹ and the teaching of German at the Manchester School of Technology, on which subject Mr. A. Kirk² has given the author a very valuable note:—but the problem in Manchester differs very considerably from that in Bengal, in that the teaching of the German language involves a great deal of grammatical work, whereas the teaching of English does not moreover the students at Manchester are adults.

We have therefore to discover a method of teaching pure reading ability in a foreign language to Beginners.

The work divides itself into two problems:—

1. The teaching of a class after it has once learned the alphabet and a small initial vocabulary.
2. The teaching of a class *ab initio*.

The experimental work described in this chapter differs from that described in Chapter 7 in that there the method was more or less fixed and definite; and the problem was—"Given this procedure, how much improvement can be effected?" In the present instance no definite procedure is postulated: it has to be worked out, and we are concerned at this stage rather with exploration of difficulties and invention of machinery, than with exact quantitative measures.

¹ See Chapter 8, page 238.

² See Chapter 5, page 121.

THE METHOD OF TEACHING READING ABILITY IN A FOREIGN LANGUAGE.

It has been argued above¹ that in order to create reading ability it is not necessary to begin by teaching speech ability as such. Consequently the methods generally in use for commencing the study of a foreign language in Europe, being based in almost all cases on the assumption that speech is a main requirement, cannot be accepted as necessarily valid for this different purpose. "If the student wishes to speak the language one kind of method may be the best: if his main object is to read it, another will be preferable."² But this most recent report of the English Board of Education on the study of Modern Languages refrains from suggesting what should be the method to be employed in the second case:—"The methods applicable to this kind of study have not, we believe, been worked out in detail for common use: experiments are needed and any resulting experience should be made known."³ The need of experiment in this direction is again emphasised in the conclusions of the report. "Methods of teaching pupils to read languages accurately and rapidly should be developed and made the subject of experiment."⁴

This is precisely our present task. Though no existing method of teaching can be adopted *en bloc* it has yet to be considered how far any of them, or any part of any one of them, may be useful for the present purpose.

THE DIRECT METHOD.

Modern teaching-practice in regard to foreign languages in general is embodied in the so-called "Direct Method." There has been a tendency of late to avoid this phrase because it has become associated with certain rather stereotyped oral methods of teaching, which are now recognised as very far from being the complete method of language study for which they were originally accepted. The Calcutta University Commission Report describes the "Direct Method" as a "short-hand expression to describe, not the natural process of learning a foreign language in the country in which it is spoken, but the imitation of the method used in the class-rooms of

¹ Chapter 5, page 119 *et seq.*

² Modern Studies (H. M. Stationery Office. 1918), page 180.

³ *Ibid.*, page 189.

⁴ *Ibid.*, page 215.

the mother country.”¹ The fundamental idea is that the child should learn his second language as nearly as possible in the manner in which he learned his first. Jespersen² deals with the problem why a child learns his mother-tongue better than any other language, but the methods whereby an infant learns his mother-tongue and the conditions under which he learns it are such as could hardly be reproduced in any school system of teaching. The great advantage possessed by the infant learning his mother-tongue over the schoolboy learning a second language is not so much that the infant has nothing else to do (for he is a very busy person, learning to walk, to feed himself, to use his hands), nor is it so much that he has no wrong habits to displace (for he has to rid himself of a thousand inaccurate lisplings and wrong connotations), but that he has unlimited opportunity, and that he is able to make full use of it. Three oral lessons a week to a class of thirty boys yield six minutes’ actual speaking practice per boy per week,³ whereas the infant has all day, and every day; and, protected by his infancy, he is able to indulge in a certain habit, brilliantly effective for the rapid acquisition of a language, yet liable to cause an adult to be placed under restraint,—namely the habit of repeating aloud and often, almost every remark addressed to him or even made in his presence.

The essential of the Direct Method lies not in the word “Method” but in the word “Direct”: it would be better named the Direct Principle, for in most cases the term denotes rather a purpose than a system. The principle is that the foreign word and its idea should be linked together not indirectly through the intermediary of a word of the mother-tongue, but by a direct bond. When we desire to express a thought in a foreign language, the thought should shape itself directly in words of the foreign language, not first in words of the mother-tongue and subsequently, by a process of translation, in words of the foreign tongue. Similarly, when we read the foreign language the idea should enter our minds directly, not indirectly through the intermediate stage of a translation into the mother-tongue.

It does not follow, however, because we do not require the indirect bond in the end-result, that we should not use the

¹ Calcutta University Commission Report, II, 299.

² Jespersen, O., *Language*, 1922, page 141.

³ Jones, E. S., “Methods of Teaching Modern Languages,” 1896, page 37, emphasises this insuperable difficulty of all oral methods of language-teaching applied to the school.

indirect bond in the initial stages. It was, in the early stages of the advocacy of the Direct Method, maintained that the second language should be learned entirely without the help of the mother-tongue, and that the meanings of foreign words should be built up by deduction from their contexts in actual use—the method actually followed by an infant in learning its mother-tongue. But the growth of language in an infant runs parallel to the process of idea-formation. It is inconceivable that in learning a second language we should go through this whole process of generalisation and abstraction again. The ideas which we possess are stored under labels of the mother-tongue¹ and in learning a second language we cannot avoid at one stage or another the use of the old labels in order to find the right ideas.

It is a characteristic of the mind that it cuts out unnecessary processes. The law of learning is "From Complex to Simple."² Increase of facility and speed in games, in type-writing, in speech comes by elimination of cumbrous or unnecessary movements, of movements once necessary, but now no longer required. (We might compare the "Motion studies"³ of Industrial Psychology.) The indirect bond, once it has served its purpose, tends to drop out of its own accord: we may retard this process, or even entirely prevent it, by insisting on translation after the need for translation has vanished; or we may accelerate it by insisting on fluency in reading or speech, so that the retention of the indirect bond becomes more and more inconvenient It is the failure to emphasise speed and facility of reading rather than the excessive use of translation, which has been responsible for the failure of the classical method to produce the direct bond in reading.

The real danger and disadvantage of the use of the indirect bond even in the early stages resides not in any result-

¹ Palmer, H., Scientific study and Teaching of Languages, page 90. "We have learned let us say mathematics, chemistry or geology in our own language..... Are we to study these sciences again *ab ovo* in order to avoid the pernicious act of consulting a bilingual dictionary?" See also Wyatt, H., The Teaching of English in India, 1923, page 44, and Richards, S. A., in "Educational Movements and Methods," Edited Adams, J., 1924, page 75.

² Welton, J., Principles and Methods of Teaching, 1909, page 65. "Short-circuiting" of the Indirect Bond in memorizing is a well-recognised phenomenon:—Woodworth, R. S., Psychology, a Study of Mental Life, 1922, page 338.

³ Myers, C. S., Present-day Applications of Psychology, 1918, page 17: Industrial Fatigue Research Board, Second Annual Report to Sept. 1921, date 1922, page 49.

ing loss of time or facility, but in the tendency which it produces towards false bilingual equations; the French boy says "I go to promenade," and the Bengali says "I go to eat air." This tendency exists rather in the active (speaking and writing) than in the passive (reading and hearing) use of the language; the foreigner is hardly likely to translate the English "to take forty winks" literally, for the mistranslation, appearing obviously nonsensical in his own language, would immediately be detected. The danger of the false bilingual equation exists in the active rather than in the passive use; indeed a sound foundation of previous passive work consisting of practice in reading, or hearing and understanding, even if done by the "Indirect Method" is likely to prevent such error: the "atmosphere" of the language thereby created makes the learner realise that his phrase "does not sound right."

In devising a method for the teaching of reading in a foreign language we need not therefore be over-shy of the mother-tongue, so long as we avoid unnecessary translation, and lay such emphasis on speed and facility as to encourage the mind of the pupil to short-circuit the unnecessary path as early as it conveniently can.

FACILITY.

In order to eliminate the indirect bond it is necessary as early as possible to produce facility of reading. Indeed Facility is the chief criterion of a good method in all aspects of the language:—"All work performed by the pupils in accordance with a properly graduated method under ideal conditions should be marked by extreme facility and extreme accuracy."¹

The main obstacles to facility in reading are methods of treatment which tend to draw the attention away from the substance to the words. Judd and Buswell² find that the number of fixations per line is the same where a child is set simple grammatical questions ("Find the active verbs") as where he is required to learn the passage by heart. The same authors find in the case of third year students of French and Latin an extreme confusion of eye-movements due to

¹ Palmer, H. E., *Scientific Study and Teaching of Language*, page 121.

² Sup. Ed. Mon., 23, Nov. 1922, Ch. IV. In some cases the number is more than 50 per cent. greater in the case of grammatical analysis, e.g., Subject A 29, op. cit., page 72.

word-study. They conclude¹ that "it is altogether probable that the constant emphasis of the schools on analytic reading may set up a general tendency in the mind of the pupil to feel that he is not doing his duty by a book unless he is perusing it slowly and laboriously in a fashion which aims at finding something in the passage other than the straight-forward meaning." It is obvious from a study of typical forms for reading lessons given by Stone² that the type of lesson commonly used by teachers and even commended by Training Colleges, tends to encourage that attitude in the pupil. Stone gives an example of a lesson which he condemns as unduly complicated; yet that which he commends as efficient teaches the reading of sixteen words in no less than seven steps, five of which involve no reading whatever.

We have used as a criterion in our adult experimental class "Time spent in reading as a percentage of total time:"³ this is a very necessary criterion in junior classes also.

THE COMPOSITE TEXTBOOK.

Such faulty methods of teaching reading are largely, if not entirely, to be attributed to the fallacy of the Composite Textbook. Language study, especially in its active aspect, does require a certain amount of grammatical practice, of semantic study and of actual word-drill for the creation of an active vocabulary in speech and in writing. Approaching the matter without prejudice we should imagine that for the creation of active speech-power a Practice Book would be required containing Phonetic drill, Substitution Tables,⁴ passages for "catenizing,"⁴ or for learning by heart, question and answer exercises for work in pairs, and so on,—all utilizing and building up a conversational vocabulary (that is, a vocabulary of words most common in actual speech). For writing a separate book would be required, since the vocabulary of writing is in many respects different from that of speech; attention would be devoted to spelling and punctuation, as well as to those greater complexities of sentence structure which are more common in written than in spoken material. For practice in Reading again a very different type of book would be required: its vocabulary would be different in many

¹ Op. cit., page 58.

² Stone, C., *Silent and Oral Reading*, 1922, pages 41-2.

³ Table 50 in Chapter 7.

⁴ See Glossary. For examples see the excellent books of the "Standard English Course" issued by the Institute for Research in English Teaching, Tokyo, 1925.

respects from that of Speech or even Writing. The number of new words introduced in a year would be very much larger, for mere recognition is much easier than learning by rote for active use.¹ Grammar would be very scanty—only so much as is necessary for understanding. But the chief difference would be as regards size. A year's work in conversation, involving as it does a very great deal of work outside the text for every line of print in the text, may perhaps comfortably be contained in a booklet of some five thousand words (25 pages). But in a book which is intended to teach reading, the reading of the text itself is the practice; there can be no practice apart from the text, otherwise it would be swimming without water.

A skilled reader can cover every word and reproduce 100 per cent. of the ideas at 200-300 words per minute; he can skim the text and grasp the essential ideas of easy matter at 400-600 words per minute (or over 1,000 words per minute in extreme cases). Thus he could read the Oral textbook for the year described above in 20 minutes, and the Writing textbook in not much longer. He could skim them each effectively in ten minutes or less.

Assuming that there is a reading lesson twice a week in a school year of 230 working days, that 40 per cent. of the period is actually spent in reading, and that the reading rate is only 50 words per minute, a textbook of some 60,000 words will be required. But for a class which has made any progress three or four times as much would be needed.²

Yet we find in the schools one short textbook of some 5,000³ words in the junior stages, as a basis for a year's work in oral work, written work and reading. All these things, to use the phrase dear to curricula, are to be "based on the text." Oral practice is to be based on a literary vocabulary, on the vocabulary of Aesop's Fables and Grimms' Fairy Tales. Or, conversely, a boy is to learn to extract the substance at high speed from conversational passages in dialogue which have no "substance" whatever.

¹ Woodworth, R. S., *Psychology, a Study of Mental Life*, 1922, page 357.

² In our First Intermediate Practice Class the consumption averaged 3,889 words per period; in the third 3,842. At this rate for a year's work (230 days) it would be necessary to provide 900,000 (830,180) words per annum. (Boswell's *Life of Johnson* contains about 5— or 600,000 words.

³ For the actual length of various Indian readers, see Table 70,—"Criteria of Reading books" below;—Primers 2,000—5,000, First Readers 5,000—9,000, Second Readers 9,000—13,000.

Now it is necessary for this composite textbook, in order that it may provide materials for so many and so diverse linguistic activities and for a period of study so disproportionate to the length¹ of the book, to be of a certain degree of difficulty. It would be a cause of annoyance to the form-master if a textbook were provided for his class which the average boy could read off almost at sight. Work on the active use of the language requires reasonably frequent introduction of new words, of new combinations and adjustments for oral or written practice *outside* the book; whereas in the passive use of language a certain degree of facility and speed are essential, and the practice of new words and difficulties must occur *in* the text:—hence new words and difficulties must be relatively infrequent. The problem in producing a textbook for practice in the *active* use of language is the problem of introducing the maximum of useful ergonic and semantic practice with the minimum of mere connective tissue. The problem of producing a textbook for practice in reading is the problem of providing a small but regular occurrence of new words in a maximum of connective tissue; for otherwise facility is lost; attention turns from the ideas to the words, and practice will be needed which is outside the textbook—the learning of vocabularies, etc. Such learning is indirect practice so far as silent reading is concerned; it assumes a transference of training, and in all such transference of training there is loss of effort. The only perfect practice for word-recognition in reading, is recognition of the word in the process of reading—that is, in the textbook itself.

We believe therefore that the evolution of an effective method for producing reading ability in a foreign language depends primarily on the provision of suitably constructed reading matter, that is, of suitable textbooks. The inefficiency of English teaching in Bengal in the production of reading ability is due very largely to the unsuitability of existing textbooks for the purpose of training in reading; and the inefficiency of English teaching generally in Bengal, in Speaking, Writing, and Reading, may be attributed in no small measure to the unsuitability of the Composite Textbook for any purpose whatever. The author was driven to this opinion by the experience of the first teaching experiment described below. Before the second experiment was initiated, this problem was more closely investigated and a survey was

¹ For a humorous reference to this aspect of the textbook, see Keatinge, M., *Studies in the Teaching of History*, 1910, page 2.

made of existing textbooks and of the criteria of a suitable textbook for the purposes of the work. Some of the results of this investigation are given below: others have already been discussed in Chapter 8. (The Measurement of Vocabulary.) Finally a series of experimental textbooks was constructed, printed and published, for the purposes of the second experiment.¹

THE FIRST TEACHING EXPERIMENT.²

This experiment was conducted, using available reading materials and with boys already familiar with the alphabet (Class III). The reading material used consisted of a selection of the easier materials from those which had been previously employed in the training of Intermediate College students.

PRELIMINARY TESTS.

At this stage a satisfactory measure of the English Vocabulary of a Bengali boy had not yet been devised. As Before-practice tests Burt's Vocabulary,³ Burt's Graded Directions and Kansas 1/1 were used. The score of the class in the Kansas test was zero. In Burt's Sentences the boy was required to translate instead of actually fulfilling the order. The scores are shown below (in the Appendix I to this chapter).

On this basis the Experimental and Control groups were paired.

The teaching began in January (the beginning of the school year).

THE METHOD USED.

1. The boys were prepared for unfamiliar⁴ words in the passage which they were about to read in the following manner: the words were written on the black-board⁵ in "print

¹ Longmans' New Method Readers, Book I, Book II, and the supplementary material—Longmans' Story Readers, "Sakhi-Sona and Sita-Basanta" and "The Fisherman and the Giant and The Flying Horse."

² With C. C. Chakravarty and H. C. Bannerjee.

³ Graded Vocabulary Test, Burt, C., Mental and Scholastic Tests, page 350. Graded Directions Test, *Ibid*, page 346.

⁴ In the selection of words likely to prove unfamiliar the teacher had to use his judgment when in doubt he consulted the Thorndike Word Book. Before beginning to teach any word of which he was doubtful he asked one or two of the average boys of the class for its meaning, to see if they knew it. (A list of all words taught in the class was, of course, maintained). The inefficiency of this procedure is discussed below, page 259, 261.

⁵ For the first few days "flash cards" were used, but were abandoned as ineffective and expensive of time.

writing;" the meaning of each word was stated orally by the teacher; the teacher then pointed to each word in turn and a boy read it and gave its meaning.

2. Practice was then given in these words by writing them on the black-board in sentence-forms (in the manner of Substitution Tables). Any difficulty in regard to the construction of any sentence in the passage to be read was dealt with at this point. New phrases were introduced here.

3. A set of questions (written in vernacular on slips of paper) was distributed; also the story, face down.

4. The questions were read over aloud by the teacher, the boys looking at the slips of paper.

5. The reading was started. Boys who wanted the meaning of any word during the reading, raised their hands.

6. The boys stood on completion of reading and the time taken by each was noted by the teacher.

7. The boys wrote the answers in the vernacular.

Speed and comprehension graphs (class and individual) were maintained.

THE MATERIAL.

On the first nineteen days the stories were composed specially and hectographed: some of the stories were original, others retold from Aesop. On the twentieth day "Robinson Crusoe" was begun. After that other very simple story-books followed.

The sections consisted of 150 to 200 words, and the Question-density was about 25 (questions per thousand words).

In January 1923 when the experiments began, tests were made. The superiority of the Experimental class in Burt's Directions was *Nil*, in Burt's Vocabulary 6.1 per cent.; in Kansas the score was Zero.

On May 5th (80th working day) tests were again made. The superiority of the Experimental class in Burt's Directions was then 6.25 per cent., and in Burt's Vocabulary 1.7 per cent.

CRITICISM OF THE ABOVE RESULTS.

The absence of boy No. 1 who was one of the best pupils certainly affected the score of the experimental group. There was a good deal of absence towards the end of the period, as it is an unhealthy time of year.

The method however was in itself defective, especially in two respects:—

1. Guessing was not eliminated.
2. The story was not followed as a whole. Owing to the inclusion of the asking of unknown words in the reading time, many boys missed the thread of the story as they did not like to ask the meaning of words which they did not know.

The procedure was then modified as follows:—

SECOND LESSON FORM.

1. Unfamiliar words were taught as before on the black-board.
2. The questions were given out, face down; also the story-books.
3. The reading was started.
4. Each boy stood when he had finished reading: the teacher noted the time.
5. The boy turned up the questions and wrote the answers.
6. *The boy stood when he had finished writing the answers: the teacher marked his answers right or wrong.*
7. *The boy opened his book and asked any unknown words; then he set to work to find the answers to any questions answered wrong or omitted.*

The Speed and Comprehension scores were those recorded in the first reading (4 and 5 above).

This procedure was used from July to the beginning of October. A fresh test (*viz.*, the third test) was made on October 5th and 6th. The results showed a superiority of 30·7 per cent. of the Experimental group on Burt's Directions and of 10·8 per cent. on Burt's Vocabulary.¹ Since the training aimed at and consisted in the reading of continuous prose, a test was made of this specific function. Two stories were composed namely, *The Prince and the Crow*, and *The Prince and the Tigers*. Words likely to be unfamiliar were taught to the Experimental and the Control groups combined. The boys

¹ Burt's Vocabulary is a scale of increasing difficulty. The mean Credit Index (on the Thorndike Word Book) of the words in Sec. 4 of Burt's Vocabulary is 61·6 (hence these words lie in the first thousand), of Sec. 5 is 21·2 (hence these words lie in the third thousand). Thus the true superiority of the Experimental group is probably underestimated by these figures.

were given as long as they liked for reading; but all finished within half an hour. They were then asked to reproduce the story in the vernacular. The score was derived from the number of ideas reproduced.

The Prince and the Tigers was the easier story. The superiority of the Experimentals on "*The Prince and the Tigers*" was 38.1 per cent. on "*The Prince and the Crow*," 65.7.

The teaching continued according to the method shown above till December. Three tests were used on December 6th. "*The King's Ring*" was a Before-question test (*i.e.*, the questions were given before the reading commenced). "*The Dog and the Hat*" was an After-question test. "*The Moon in the Water*" was a Reproduction test, with a fixed time: the time given was 7½ minutes (the time required to read it aloud once very slowly, at rate of 21 words per minute): the story was reproduced in the vernacular and scored by the number of ideas.

The fixed time story (*The Moon in the Water*) is the easiest, *The Dog and the Hat* next, *The King's Ring* the most difficult, in respect of vocabulary.

As regards Comprehension the Experimental class showed:—

In the Before-question test a superiority of	54.5 per cent.
In After-questions test	32.3 per cent.
In Fixed Time, Reproduction test	29.6 per cent.

As regards Rate, the Experimental class showed:—

In the Before-question test a superiority of	66.2 per cent.
In the After-question test a superiority of	36.2 per cent. ¹

Though the boys of the Experimental class lost six periods per week of the ordinary English reading (which includes English writing and English speech from a "Composite text-

¹ In considering the results it is to be noted that Karim, one of the best boys in the Experimental class, lost his Control boy, hence his scores are omitted. Manik also one of the better pupils, lost his Control boy, and was absent in the second and third test, though he was present in most of the teaching. Animesh and Mohiuddin were selected on Aug. 11th, owing to the diminution of the class; their scores were, Burt Vocabulary, Ani 23. Moh. 22; Burt Directions, 2.5 and 3.0; T. C. Vocabulary, 64 and 69.

book") yet in the ordinary school examination the two groups, the Experimental class and the Control class, are practically equal, while on the Tests the former showed a superiority of 37.3 per cent. This may be attributed to the fact that six out of ten questions in the school examination involved English reading ability, and the Experimental class did not miss the Composition lessons though they missed all the lessons on the text. The Composition lessons as taught in Bengali High Schools are a much "purer" practice in the active use of the language than the Composite Text-book lessons. In fact this examination-result is in part an indication of the inefficiency of Composite Text teaching.

The class was also tested with the C. B. test and the Kansas test. No child qualified to obtain a score on the C. B. test:¹ on the Kansas test the superiority of the Experimental class is very marked (300 per cent. Comprehension, 350 per cent. Rate).

SUMMARY OF THE RESULTS OF THE FIRST TEACHING EXPERIMENT.

In the original Lesson form the teacher relied entirely upon his ability to predict what words would be unfamiliar to the pupils and the scheme of the lesson was such that, if any unfamiliar word occurred outside this list, the boy was neither encouraged nor given sufficient opportunity to learn its meaning. It has been seen that as a result of this flaw the Experimental class failed to show any marked superiority over the Control class during the first four months.

The defect was remedied in the revised lesson form, in which the boy obtains the meaning of any unknown words after his first reading and then reads again. As a result of this modification a marked improvement was shown.

The procedure cannot however be considered satisfactory. For if the teacher teaches too few new words, the first reading is relatively a waste of time; if he teaches too many, he wastes the time of the class by teaching the words already familiar to most of the boys. Yet he cannot know exactly how many to teach. Ideally he should know exactly what words in a given section will be unfamiliar; he should prepare those words beforehand and let them become fixed in the minds of the pupils by being recognised in the actual process of reading.

¹ That is, no child obtained 75 per cent. correct answers: see Chapter 6.

It was obvious that this could not be done with the existing reading material. Moreover even the best of the existing material contained so many unfamiliar words that progress was slow and difficult.

It was obvious that the work was being very considerably hampered by the inefficiency of the reading material which was being used. In spite of all efforts, (which included an examination of all the specimen copies in the libraries of three Inspectors of Schools and the two Textbook Committees of the Province as well as of all materials available in the market) we were unable to discover any reading matter which was more suitable for the purpose. It was clear that no further advance could be made by improvement of the method unless the material could be improved. It was therefore evident that the next step must be an exact study of the faults of this material and an attempt to construct something more efficient.

Thus what began as a teaching-experiment became for a time an enquiry into and an experiment in the construction of teaching materials.

THE DIFFICULTY-DISCREPANCY AND THE AGE-DISCREPANCY IN READING BOOKS.

The main difficulty for the English child learning to read his mother-tongue lies in the spelling out or recognition of the words: his vocabulary is generally sufficient for the ideas if suitable matter is presented. Hence the writer of English books for English children will avoid words which present difficulty in respect of reading,—long or irregular words: he need not however exercise any special caution as regards the size or selection of vocabulary so long as his matter is suitable and his style reasonably simple; whereas a boy learning a foreign tongue at a later age has already mastered the general technique of reading: the use of a new alphabet is merely a matter of adapting an existing skill to a new situation. The difficulty for the foreign boy lies in vocabulary. Hence the writer of English books for foreign children need not exercise special caution as to the reading-difficulty of words (save in the earliest stages), but he must exercise the greatest care as to the size and selection of vocabulary.

If an English and a foreign boy both begin to learn English reading together, in the initial stages, and so long as it is a mere matter of translating letter-signs into sounds and

ideas, the foreign boy, being older and already able to read his mother-tongue, will have some advantage; but this advantage will very soon be lost when he comes to interpretation, for the English boy has only to learn the reading of a word which he already knows, whereas the foreign boy has to learn both the word and the reading. It is obvious therefore that a second reading-book which is suitable for the English boy will not be suitable for the foreign boy.

Moreover, in the case of the English child we assume that the growth of the vocabulary depends on factors other than the reading, hence there is no need carefully to dovetail the vocabularies of the first and second reading-books together; whereas the main or sole source of vocabulary for the foreign boy is his reading-book; hence it is essential that the second reading-book should assume and set out from the vocabulary of the first.

Lastly, (as has been pointed out in connexion with the measurement of vocabulary)¹ there is the Age-Discrepancy. In this case the mean nominal age of the experimental class was 8·8, the actual age probably half a year more; the books used in the experiment were suitable for English children aged 6 but they were too difficult in vocabulary: whereas the "Infant-Readers" investigated as an alternative, though slightly more suitable as to vocabulary were far too childish in respect of their matter—which was in fact, infantile.

It is clear therefore that "Easy" books written for a child in its native tongue are not likely to be suitable material for children who are learning the language as a foreign tongue at a considerably more advanced age. It will be necessary to provide, in the early stages at any rate, books constructed on entirely different principles.

THE SELECTION OF VOCABULARY FOR TEACHING READING ABILITY IN A FOREIGN LANGUAGE.

The lines on which it is possible to attempt a solution of the above problem (of expressing ideas of a higher mental age in a limited vocabulary corresponding numerically to a lower mental age) have already been indicated in the discussion of the English vocabulary of the Bengali student. In order that the problem may be solved, it is clear that this vocabulary must be selected with the greatest skill—with a

¹ Chapter 8, pages 233-240.

degree of skill which would be unattainable unless aid of some kind were forthcoming. Every word introduced must be of the greatest possible utility, so that it may do the work of ten or twenty or a hundred words selected at random. There are certain words which we cannot do without—for example *the, man, go, is*: such words served us a hundred times in the day for every once that we are served by such words as “*aunt*,” “*mustard*,” “*gardener*,”¹ and many other specimens of the vocabulary of the old-style French Primer. Given a vocabulary of 300 words, if these words are without exception, selected from the most indispensable words in the language, we can probably do a surprising amount with them: we may be able to tell simple stories, or even convey information. On the other hand if these three hundred words are words which are ordinarily needed only once in a year or so, and do not comprise the essential words without which almost any speech is impossible, we shall be able to do very little, or even nothing, with them.

The more common a word is in the language, the more likely it is to prove useful to us on many occasions. Hence it is necessary to construct a vocabulary out of the most common words in English: the commoner the word, the more indispensable it is for the expression of ideas, and therefore the earlier it will be needed, and the earlier it must be introduced. If this principle is successfully observed, at any given moment the boy will possess a vocabulary of maximum utility compatible with its size. To make such a selection by mere guesswork is clearly impossible: how impossible it is, may be seen from the blunders which are visible in almost any juvenile literature which one cares to examine.² Fortunately we are not limited to mere guesswork, since Word-frequency Lists, though not designed for this purpose, render the task practicable.

By means of the Word-frequency List, the faults of the books which had been used in the First Junior Teaching Experiment were very clearly revealed. For example, *Sindbad the Sailor* (in words of one syllable) Chapter I contains the following words—*Mode, isle, nought, plight, ere, lack, herbs, groom, five-score, hale, east, folk*. In the table below the

¹ *Aunt*, position 1500th; *Mustard*, 6300th; *Gardener*, 2000th. *The, man, go, is* are in the first 100 commonest words.

² See also Table 67 “The Account of Scatter in the Vocabulary of Bengali boys.”

'Credit-indices' of these words are shown, together with the more "frequent" synonyms which might have been substituted, and their credit-indices.

Original word found in the reading-book.	Credit-index.	Proposed Substitute.	Credit-index.
mode	22	way	107
isle	24	island	66
nought	13	nothing	100
plight	11	state	107
ere	40	before	159
lack	40	need	100
herbs	10	plants	93
groom	11	servant	47
five-score	32	one hundred	97
bale	5	box	75
cast	48	thrown	69
folk	44	people	126
Mean	25.8		101.4

TABLE 68.—The Vocabulary of *Sindbad the Sailor*, in words of one syllable (Chapter I).

¹ These credit-indices are from the "Teachers Word Book" (Thorn-dike, E. L., Teachers' College, Columbia, 1921. See also Teachers' College Record, Sept. 1921). The Credit-indices are values based on frequency and range of occurrences. See Table below.—

Credit Number.	Position of words in order of "Commonness."	Credit Number.	Position.
49 and over	1—1,000	9	5,145—5,544
29—48	1,001—2,000	8	5,545—6,047
19—28	2,001—3,000	7	6,048—6,618
14—18	3,001—4,000	6	6,619—7,262
10—13	4,001—5,144	5	7,263—8,145
		4	8,146—9,190
		3	9,191—10,000

Thus whereas the mean frequency of the words in the original story lies within the third thousand commonest words in English the mean frequency might have been brought within that of the third hundred commonest words, had the author of the book chosen his vocabulary more judiciously.

Book	Page 1.		Page 30.		Page 60.		Page 90.	
	500 com- monest words.	1,000 com- monest words.	500	1,000	500	1,000	500	1,000
Percentage of words outside the first.								
<i>Robinson Crusoe</i> in words of one syllable.	9.1	1.5	16.7	10.4	15.6	9.4	5.1	3.2
<i>The Wizard's Chair.</i>	12.7	2.1	9.0	1.1	13.2	11.0	.	.
<i>Gulliver's Travels</i> in words of one syllable.	6.4	0.9	7.0	2.3	6.5	1.8	13.8	0.1

TABLE 69.—Percentage of words on the page which are outside the first 500 commonest, and first 1,000 commonest words in English, in simple reading-books employed in First Teaching Experiment.

It is evident that, although these books may possibly be useful for the English child who is beginning to read his mother-tongue, for the Bengali who is beginning to read English they are entirely unsuitable.

THE CRITERIA OF READING-BOOKS.

As a preliminary to the construction of reading material which might be an improvement on such books it would be valuable to determine with greater exactness what should be the criteria of an English reading book for Indian boys. Then whatever criteria are applied in assessing the utility of books already in existence might be applied to constructing books for the experimental classes, and also to the books when they had been thus constructed so as to indicate how far they also, as mere pioneer work, might be improved.

There are various methods of estimating numerically the value of the vocabulary of a book. The measure of:

$M = \frac{\text{Sum of Credit indices}}{\text{Total number of words}}$ is not a very useful one, as an injudiciously chosen word will be diluted by a large number of "connective tissue" words, such as "and," "the," etc., and will not affect the result as much as it should. This disadvantage may be partially avoided by counting the nouns only, or a sample of them. Thus a count of the first 100 words of Series A¹ Reader 3 and of the first 100 words of Series B Reader 3 yields the same value for M (Mean values, 140.7 and 140.9): but counts of the first noun on every page for 25 pages yield slightly different values for Series A, 90.4, and for Series B, 87.2, and Series A is generally considered by school teachers to be easier than Series B.

In an attempt to obtain exact criteria of textbooks Lively and Pressey² use three measures, the weighted Median, the "Range," and the Number of Zero words. The weighted median is obviously an unfortunate choice, for the median tends to reduce the effect of extreme deviations,³ viz., uncommon and ill-selected words, and by "weighting" such words are swamped altogether. The 'Range,' which here means

¹ The names are withheld. The two series are of English reading books in very common use in Bengal.

² Lively, B., and Pressey, S. L., *Educational Administration and Supervision*, IX/7, Oct. 1923. "A Method of Measuring the vocabulary burden of text-books."

Other studies on this topic are:
Housh, E. T., 17th Yearbook of the National Society for study of Education, 1918. "Summary and Analysis of ten second year readers."
Packer, J. L., 20th Yearbook of the National Society for the study of Education, 1921, "The Vocabularies of ten first year readers."
Kaufman, M. L., *Journal of Educational Method*, 1/10, June 1922. "A Vocabulary and Phrase Study for the first grades." (Discussion of selection of words and phrases for mastery at various stages on the basis of frequency of occurrence.)

Selke, E. and A., *Elementary School Journal*, XXII/10, June 1922, "A study of the vocabularies of beginning books in Twelve Reading Methods." (Number of different words, frequency of appearance of each. Words common to various readers.)

Gregory, C. A., *Journal of Educational Research*, VII/2, Feb. 1923, "Reading vocabularies of Third grade Children." (New words, frequency of each in individual and in total books studied: 8 books, including one *Arithmetic*: (Why?).

Uhl, W. L., *The Materials of Reading*, 1924, Chapter II. (A general review of this subject.)

³ Rugg, H. O., *Statistical Methods applied to Education*, 1917, page 145. For "Median" see the Glossary. It may roughly be defined here as the credit-index of the middle word when all the words have been arranged in order according to their credit-indices: in an "un-weighted median" each word would be only counted once.

the total number of different words, is a useful measure as it indicates the number of new words which a boy has to learn in the year, but it is of absolute value only for a first, not for a second reading-book. The correct measure should be Range of Book I, Range of Book II after deducting all words used in Book I, Range of Book III after deducting all words used in Books I and II, and so on. Number of Zero words means the number of words which do not occur in the Thorndike Word Book because they are outside the first 10,000 commonest words. In applying this as a criterion we must be just to the authors: Thorndike himself admits that his vocabulary gives rather undue weight to literary matter, and insufficient weight to scientific and technical.¹ The author who tries to break away from the conventional fairy-tale and wearisome and everlasting "nature study," and give a little popular science, would on this system of counting be very heavily penalised. He must not, in explaining a little elementary astronomy, use the word "satellite" or "solar (system)" or "nebula" or "ether." He may use "ethereal" but not "ether." It is obviously much more reprehensible in an author to use a perfectly useless and avoidable word like "ethereal" in a junior textbook, than to venture, with sufficient preliminary explanation, to introduce the valuable concept of "ether." Similarly an author is much more to be blamed for using the word "intercession" where he might have used "prayer" than for introducing the unavoidable zero word "artery" in a lesson on the blood. An author cannot be blamed for a word which is essential to the plot of a well-chosen story or subject—for example "albatross" in the story of the Ancient Mariner.

In fact the measure needed is not one of zero words as such, but of *avoidable* zero words, and of avoidable words of lower index generally.

Thus the mere counting of words and addition of credit-indices is not likely to be very helpful: it would seem better to make a new departure, to describe as accurately as possible what is required of a book intended for the instruction of a foreigner in the reading of English, and then endeavour to express this description in terms which are susceptible of numerical treatment.

¹ Teachers' College Record, XXI/4, Sept. 1921, page 354. Thorndike writes that were his material more representative of technical and scientific literature "*Angels* would go down and *bricks* would go up."

Four points in the teaching of the reading of a foreign language appear to be axiomatic:—

1. *The pupils should at the earliest possible moment derive pleasure and a sense of power from the study.*
 2. *Words should be learned by practice in actual reading situations, not memorized as "Vocabularies."*
 3. *New words should appear at regular intervals, not in a mass.*
 4. *The matter of the reading-book should be suited to the age of the foreign pupil.*
1. *"The student should at the earliest possible moment derive pleasure and a sense of power from his study."*

It follows that in the case of boys whose mother-tongue is not written in the English alphabet, reading of words, sentences, and stories should be begun before the alphabet is complete:¹ otherwise the pupil will spend many weary weeks learning the whole 26 letters before he ever reads a meaningful sentence; this would be liable to discourage a child at the start. Moreover the alphabet is best learned in the actual reading of rational material when the reader knows what letter and what word to expect:—even adults will make an error of a letter in an unfamiliar proper noun.

As a test of a reading-book in this respect we should ask: After how many school-lessons (*viz.*, 45 minute periods in a normal class) does the child begin to read words? After how many lessons does he read sentences? After how many lessons does he read continuous matter? But to obtain a practical criterion we may ask two questions:—(1) "Over how many words of reading matter is the learning of the alphabet distributed?" Up to a reasonable limit the larger the number of words, the better the book in this respect. For convenience the answer may be expressed as the

- Criterion A. *Number of new letters introduced in each successive 100 words, first 100, second 100, third 100, fourth 100.* The
- Criterion B. *other question will be:—(2) What is the number of words in the child's vocabulary when the first continuous narrative is introduced.* (The words used in the first narrative should

¹ Or else the whole alphabet must be taught so rapidly that boredom is not produced before it is complete. But, as will be seen below, this was tried, and was found to be impossible.

be included.) The smaller the number of words the better the book in this respect. It is however not reasonable to expect narrative when the vocabulary is much below 100 words. (This criterion is not very useful in practice as regards very badly constructed books, as the authors of such books introduce a narrative at random, irrespective of the vocabulary built up in the foregoing exercises. It is, however, useful for the better class of books.

2. "*New words should be learned by practice, not by learning vocabularies.*"

"Pleasure and a sense of power" in the reading of a foreign language arise from ability to read long passages without being forced to resort to the dictionary. At the one extreme a book which contains no words not already known to the reader will (if its matter be suitable) give the maximum pleasure and sense of power; but, though it may provide very valuable material for practice in increasing facility of reading, it will do nothing to increase the student's vocabulary. On the other hand a book which contains no word which is already known to the reader, will give a minimum of pleasure and sense of power":—nor will it give the maximum practice in vocabulary: for the best practice is the most "direct," and in using a book which contains only unfamiliar words it will be necessary to learn a vocabulary beforehand: the learning of a vocabulary is not the most direct practice of the mental function involved in recognising and interpreting a word in the process of reading. The most direct practice in acquiring a reading vocabulary is the recognition and interpretation of words in the actual process of reading.

We may use as a criterion of a reader in this respect the *Number of Running words per New word*. Two new words per page (that is, per 200 words) would be possibly ideal, but rather impracticable in respect of expense of reading matter for a year's work. Three or four new words per page is nearer the mark. Over five would begin to be a burden; and over ten would certainly interfere seriously with the continuity and pleasure of the reading and tend to produce vocabulary-learning and other types of indirect practice. Hence the criterion in this respect may be:—

The number of running words per new word should not be less than 30 in a Primer or 40 in a First Reader.

According to this standard a boy studying a Primer will have to look up every thirtieth word in a dictionary, or 7 per page; and a boy studying a first reading-book will have to look up every fortieth, or 5 per page. At these standards we consider that the boy will just be able to derive pleasure and continuity of meaning from his reading; though a higher standard, *e.g.*, 40-50 in the Primer and 60-70 in the First Reader would be very desirable.

3. "*New Words should appear at regular intervals.*"

In a book of 50 pages, (that is 10,000 words) with a vocabulary of 200 new words, the new words would be 1 in 50, or 4 per page. But in composing the book, especially a Primer, the tendency is for the new words all to crowd in at the beginning, so that the first ten or twenty pages are almost undiluted dictionary work which gives the boy a distaste for the book, and the last twenty pages mere reading practice. The lower the grade of the book the more difficult is it to avoid this tendency. If the new words at the beginning are very numerous, none of these multitudinous new impressions will be firmly fixed. Moreover if all the new words occur in the first few pages, they will each occur once or twice only, and in the composition of the later pages it will be impossible to ensure a reasonably equal amount of practice to each and all: some words will occur at the beginning of the book and not again.

A new word on its first appearance should occur many times, in order to fix itself in the mind. After that it should (ideally) occur progressively less and less frequently in conformity with the "curve of forgetting," until that point is reached where it is completely learned and no further repetition is required. It is obviously impossible to conform strictly to these conditions, but it is possible to note carefully the first occurrence of a word and make a point of introducing it as frequently as possible in the passage immediately following. This cannot be done unless the introduction of new words is carefully controlled, and made gradual throughout the books.

Criterion D.

The criterion in these respects might be:—*The number of new words introduced per 100 words at the beginning, and at the end of the book*—(A count of 400 words at each point

appeared sufficient).¹ The quotient in each case should be the same.

In selecting words for inclusion in a vocabulary those words must be selected first which are most common in the English language. We shall thus obtain at every stage for any given number of words in our vocabulary the maximum power of expression. Hence, apart from the special difficulties involved in the early stages in the gradual introduction of the letters of the alphabet² and apart from genuine exigencies of the plot of continuous passages, in a First Book introducing 200 new words, those 200 words should, ideally, be the 200 commonest words in English. The nearer they approach to that ideal the better, and any word introduced from outside those 200 which can be replaced by a word of a frequency nearer to that of the 200, should count against the author. So also in the case of more advanced books having (together with their preceding volumes in the same series) aggregate vocabularies of 400, 800, 1,500 words, etc., the vocabularies should, ideally, consist respectively of the first four, eight, and fifteen hundred commonest words.

Criterion E. We may therefore take as a useful criterion the *Percentage of avoidable words of low frequency in the vocabulary*.

In computing the measure of a book's compliance with this criterion we should adopt as the index of minimum word-frequency allowable, the total number of new words introduced thus far, that is, up to the end of the book under consideration.

Criterion F. Pursuing the same line of thought, viz., that the vocabulary should possess the maximum utility for its number of words at any stage, we may conclude that in the early stages especially, in which the utmost economy of vocabulary is needed (*vide* Point C above), all synonyms are waste of opportunity on the part of the author, and waste of effort on the part of the boys. We may take as our criterion in this respect the *Percentage of Synonyms in the vocabulary* (each pair counting as one unit). The figure should, ideally, be zero.

¹ This conjecture, when put to the test, proved incorrect: see below page 276.

² When only four or five consonants and the vowels have been introduced the choice of words which can be made with these letters is so limited that strict adherence to the word-frequency order is not possible; but, even so, the divergence from it need not be very great. Existing reading-books do not attempt to introduce the alphabet in this way, and their authors cannot, therefore, put forward this excuse.

4. *The Mental Age of the book.*

We have pointed out that the mental age of the matter of a reading-book in a foreign language ought to be higher than it would be in the mother-tongue, given a vocabulary of the same size. The book irrespective of the smallness of its vocabulary must contain matter suited to the mental age of the foreign boy who is intended to read it. The success with which this object has been achieved can only be judged subjectively, though experiment would be possible (*e.g.*, by translating selections from English reading books for Bengali children into Bengali and by taking the Mean and Standard Deviation of a number of opinions as to the age for which the matter is suitable). The subjective measure is, however, valuable and may be expressed in the form:—

Criterion G.

“ Would the book, if translated into the mother-tongue, be interesting to boys of the age of those who are studying it in the foreign language? If not, to boys of what age would it be interesting?”

The comparison might be expressed in the same form as an “ Intelligence Quotient.”

Our Criteria for a series of reading-books written in a foreign language are thus:—

- A. *The number of new letters in the Primer in each successive 100 words (first, second, third and fourth hundred).*
- B. *The number of words in the child's vocabulary when the first continuous narrative is introduced (including in the count the words used in the first narrative).*
- C. *The number of running words of text per new word of vocabulary.*
- D. *The number of new words introduced per 100 words at the beginning, and at the end of the book (calculated from 400 words at each point).*
- E. *Avoidable words of low frequency expressed as a percentage of the total number of new words in the vocabulary.*
- F. *The number of Synonyms (each pair counting as one) expressed as a percentage of the total number of new words in the vocabulary.*

G. *The mental age of the book divided by the actual age of the children for whom it is intended.*

Let us proceed to apply these criteria (with the exception of G) to various readers generally considered among the best in present use in Bengal.¹

¹ With Sishu Pal, Sachindra Adhikari and Satis Bannerjee.

Crite- rion.	Series.	PRIMERS.					FIRST READING-BOOKS.					SECOND READING-BOOKS.			
		1	2	3	4	New Method.	1	2	3	4	New Method.	1	2	3	4
A	The number of letters introduced in the First, Second, Third, Fourth, hundred words.	26 0 0 0	14 5 2 0	21 0 0 0	17 3 1 2	6 1 2 0	...	...	...	...	...	...	...	...	...
B	The number of words in the vocabulary when the first narrative is introduced.	267	51	—	770	86	...	...	...	...	...	...	...	...	...
O	Running words per new word.	67	55	109	65	383* (447)	195	82	200	128	560	234	210	208	181
R	Avoidable words of low frequency as a percentage of vocabulary.	44	24	0	43	1	44	16	21	95	0	73	103	45	227
F	Synonyms as a percentage of the vocabulary.	39	40	03	18	24	30	50	37	45	08	42	106	42	44
G	Mean Credit-index	94.2	...	...	...	107.6	736	...	...	...	32.1	19.6	...	...	...
H	Zero words (net)	5	8	3	1	1	8	8	1	3	0	9	10	10	24
I	Number of new words	353	327	313	814	208	429	571	292	877	236	383	404	639	543
J	Length (running words)	2353	1797	3415	5506	7930* (9296)	8371	4639	5838	4842	13217	8973	9721	13600	9837

* The vocabulary is built up in 7980 words, and there are 1316 words of revision-practice, total 9296.

TABLE 70.—The Criteria of English Reading-books in common use in Bengal and of the two Reading-books constructed for the Second Experimental class.

The results of this study of four different series of books in common use indicate certain curious phenomena. In viewing the table it is, however, to be remembered that in many respects the books here studied are really, so to say, beneath criticism, since their authors have not considered any criteria at all.

Point A. There is no attempt to introduce the letters in a regular order with sufficient practice of each letter at its first appearance. Either the whole alphabet is printed on the first page, as in Series 1, or—as in Series 2, 3, and 4—the letters come in as they please, without notice and without practice.

Point B. This point also has little meaning in reference to books so unmethodically constructed. There is in none of the books any attempt to build up a useful vocabulary with which interesting tales may be narrated at an early stage without producing a sudden influx of new words. The vocabulary is constructed in an entirely haphazard manner, and the earlier (as well as, in some cases, the later) continuous passages are so pointless that it is difficult to know whether to describe them as “narrative” or not. In the Primer of Series 3 there is no continuous narrative.¹

Point D. This has not been shown in the table. The computation was made in some cases, but it was found that a count of only four hundred words does not overlap the first or last item in the book: the first is often a formal passage, and the last is often a poem or descriptive passage. Poems and descriptive passages tend to have abnormally high new-word-densities. The criterion is apt therefore to represent merely the chance density of the first and last item in the book. It would be better to show the density of new words (new words per 1,000 running words, or running words per one new word) in each story, poem or article throughout the book; and this, if done at the time of the initial tabulation of new words, would not add greatly to the labour.

¹ This criterion must be used judiciously. With beginners the “Size of the Unit” (see below, page 305) is so small that narrative is hardly possible. Moreover, narrative involves one particular type of Reading situation; no reasoning is involved and the words of the text give the answer to the question. Narrative should be preceded by short question exercises involving varied types of situation, and may be introduced when the vocabulary is about 100 to 150. In the “New Method” reading-books narrative was introduced too early, and the revision exercises had subsequently to be added for this reason (see page 289 below).

Point E is a difficult point to determine as the standard of what is "avoidable" is necessarily subjective. In general these words have been taken as avoidable which could be replaced without alteration of the sentence. Many others might be avoided by a little re-writing or by omission, but these are not included.

Point F. 'Synonyms' is a very good criterion; and works well in practice.

Point G. The Mean credit-index of new words (not of running words) is shown in two cases only, *viz.*, our own books compared with one of the four series as a sample. The books of these four series are not worth the labour of the computation, as there has been no real attempt at vocabulary selection.

Point H. Zero words—One or two are no discredit, as a certain number of these are in India more common than the words in the Thorndike Word Book, *e.g.*, *rupee*. But the large number found in Series 4 Second Reader appears to be a sign of carelessness or lack of judgment.¹ It will be seen that this whole series shows up very badly in all the criteria.

Point I. Number of new words. There appears to be little or no attempt in any of the reading-books to keep a check on the number of new words. One series has a curious habit of printing a vocabulary at the head of each section, but the vocabulary does not contain nearly all the new words. Thus on one page the vocabulary contains one word, whereas the actual number of new words is seven: on another it contains three words, one of which is *not* new, but omits five words which are new.

We have in Chapter 8² studied the number of new words per annum which are assimilated by a Bengali boy under existing methods of teaching. How very widely these reading-books depart from the actual norms can be seen in the table. One book introduces 844 words in the first year as against an actual maximum increase of 216, while the average is 153. These books are nominally all of the same standard and interchangeable, yet in the second year in one reading-book a boy is supposed to learn 292 new words, in another book of the same standard 572.

¹ Or more probably of foreign authorship. The book is signed by an Englishman, but from internal evidence part of it at any rate appears to have been written by a person whose mother-tongue is Bengali.

² Table 62.

EXPERIMENT IN THE TEACHING OF THE ALPHABET.

Before commencing the construction of a reading-book a preliminary experiment was made to determine which of the two following courses would be superior:—

- (a) To teach the whole alphabet, using nonsense syllables, as quickly as possible, so as to get on to meaningful material with full liberty as to choice of words at an early date; or
- (b) To build up the alphabet gradually by means of meaningful material.

The first alternative was given a trial. It was thought that if the whole alphabet could be finished in a month or so, it would be possible on its completion to give more interesting material and a better selected vocabulary. It was however found that the children had so little interest in the meaningless syllables that their progress was unsatisfactory and there was a danger of creating an aversion to the subject. The scheme was therefore abandoned.

THE CONSTRUCTION OF A READING-BOOK.

The second alternative remaining, a reading-book was constructed which introduced the alphabet gradually and presented meaningful material from the first. The first lesson introduced the five vowels and the words "A" and "I." The second introduced T, S, and the words *it, is, sit, sat, etc.*, and various sentences. In the tenth lesson, when 15 letters had been taught, "Silent Drill" was introduced. Simple commands were to be written on the black-board and obeyed by the boys individually or in mass as indicated by the teacher, *e.g.*, "Stand," "Put up your hand," "Put your hand on your head," "Sit." In the eleventh lesson (16 letters) a story was introduced entitled *The Moon in the Water*. The remaining lessons (except Lesson 20) all contained stories. (*The Dog and the Hat, The King's Ring, The Mad Dog, The Glass-seller, The Horse's Egg, Jack and the Giant, Dick and his Cat, Zal, son of the King.*) Lesson 20 was on the numerals, and contained various questions and¹

¹ The idea was taken from Watkins, E., *How to teach Silent Reading to Beginners*, 1922, Ch. VIII.

sums, e.g., $2+2=?$ —; How many feet has a boy? a fish? etc.

The number of words in the child's vocabulary at the introduction of meaningful sentences was 5, at the introduction of Silent Drill, 65, at the introduction of stories, 86. The total number of words in the vocabulary of Book I was 208; the length of the book was 9,296 words or 45 running words per new word. The mean credit-index of the words (Thorndike Word Book) was 107.6; this is equivalent to the credit of 300th commonest word in English. Of the 208 words 137 are among the first five hundred commonest words in English, 165 among the first 1,000.

The remaining 43 words are shown below:—

Credit.	Word.	REMARKS.	Credit-index.	Word.	REMARKS.
32	hit . .	†*	5	seller . .	†
27	hut . .	†*	46	cat . .	§*
36	net . .	†*	18	mice . .	§*
47	nut . .	†*	34	foolish . .	§*
25	tin . .	†*	9	melon . .	§
22	mat . .	†*	<i>Nil</i>	rupee . .	||§
47	map . .	†*	9	weaver . .	§
34	pan . .	†*	38	giant . .	§
37	pin . .	†*	36	huge . .	..
39	pot . .	§*	6	jam . .	*
28	tap . .	†*	25	jar . .	*
38	mad . .	§*	30	knock . .	§
34	mud . .	§*	23	rice . .	||
45	pour . .	§	41	smell . .	§
43	wet . .	§†*	48	wake . .	§
47	angry . .	§*	19	amazed . .	*

* Necessary for teaching a letter.

† Used in the early stages when few letters are available; other more common words could not be formed with the available letters.

‡ Derivative of a common word included in the vocabulary.

§ Unavoidably connected with the plot of a story.

|| The Credit-index for Indian boys would obviously be greater.

Credit.	Word.	REMARKS.	Credit-index.	Word.	REMARKS.
30	drag .	§*	28	gaze .	*
24	rag .	§	21	queer .	*
32	hook .	§*	5	quill .	*
15	tank .	||	23	sexed .	*
37	bite .	§*	13	nought .	..
25	lane .	§*			

* Necessary for teaching a letter.

‡ Unavoidably connected with the plot of a story.

§ The Credit-index for Indian boys would obviously be greater.

TABLE 71.—Words in the specially constructed Primer which are outside the 1,000 commonest words.

The Second Reading-book assumed knowledge of the words contained in the First. In each fresh story or article certain words were added, and each contained only the words of the first book and those which had been added up to date. In this way a vocabulary of a further 236 words was built up. The total length of the second reader was 13,217 words, or 56 running words per new word. The mean credit-index of the added words was 82.4 (or that of the fifth hundred commonest words in English). The Second Reader contained ten stories (from Bengali 5, from Persian 2, from the Bible 2, from Sanskrit 1) and ten informative articles on topics such as Railways, the Post Office, Earthquakes, Hygiene, etc.

THE ORDER OF THE LETTERS.

In the reading-book constructed for the second teaching experiment no definite principle was adopted as to the order in which the letters should be introduced. Twenty-nine out of the 43 cases of words of low frequency contained in the first book are due to the exigencies of word-formation with a limited number of letters available. It is possible that, by determining the letter-order more skilfully than by mere trial and error, some of these might have been avoided.

There is very little material available on this subject. The literature of Shorthand contains some fragmentary statements

regarding the relative importance of the sounds of English. In 1874, William Whitney¹ observed the relative frequencies in 10,000 sounds from ten literary classics, 1,000 from each, half prose, half poetry. Very recently a much more elaborate and very valuable count has been made by Godfrey Dewey.² Dewey's analysis is also of the speech sounds, and is made in phonetic script. The speech sounds and the spelling of English correspond so little that Z occupies the thirteenth place on Dewey's list of 43 sounds, whereas it is the least common letter in actual print.

Since the sole purpose of our work is the creation of silent reading ability, and reading ability depends on the instantaneous recognition of words as wholes in their normal spelling, the order which has to be considered is that of the normal printed alphabet. Statistics of the frequency of letters in the language as a whole could doubtless be obtained from any type-foundry:—but we are not dealing with the language as a whole. By the time a boy reaches the stage of dealing with the language as a whole he has left the alphabet and its problems far behind. The aim of the first reading-book is to teach the letters, and at the same time to build up a small vocabulary of the most essential words. Dewey³ points out (in warning students against basing letter-counts on lists of the most common words) that the letter frequencies of the most common words and the letter frequencies of the language as a whole are by no means identical:—"It is an interesting and significant fact that some of the commonest syllables of the language scarcely occur among the 500 or even 1,000 commonest words, but owe their importance rather to occurrence in many different words each relatively infrequent." As an instance it may be noted that there is not a single negative "Un-" prefix in Thorndike's first 1,000 words, and only one in Dewey's 1,027 commonest words.

It would appear that the most helpful letter-frequency order for this particular purpose is likely to be that of the most ideal vocabulary which could be used in teaching the alphabet, for this letter order is most likely to produce that ideal vocabulary. Thus if a vocabulary of 100 words is to be used in teaching the alphabet, the order in which the letters are introduced might be based on their relative

¹ Whitney, W. D., *Oriental and Linguistic Studies*, 1893, page 202.

² Dewey, G., *Relative Frequency of English Speech Sounds*, 1923.

³ *Op. cit.*, page 6.

commonness in the commonest 100 words; similarly if 200 words are used, the letter-frequency order of the commonest 200 words might be adopted. This at any rate is likely to be better than mere guess work.

As to the exact number of words which should be used in teaching the alphabet, the whole alphabet except Z is covered by the first 500 words, though the frequencies of Q (once), J (once) and X (three times) are very low. The first 200 words do not contain Q, X or Z, and J occurs only once. The first 100 words do not contain J, Q, X or Z, and the frequencies of P (2) and Y (4) are very low. The complete alphabet is covered only by 1,000 words.

If the alphabet be taught with a smaller vocabulary than the least number of words in order of word-frequency which contains all the letters, the vocabulary used must necessarily be just so far below the ideal, as low-frequency words have to be introduced to teach low-frequency letters. It was the author's own experience in learning Bengali that though the whole alphabet was learned at the beginning, many letters were subsequently forgotten because, after being learned, they were so seldom encountered that there was no practice in recognition. Hence even if the whole alphabet can be taught in 200 words, it is probably not worth while to teach it in so few words, since the boy is almost certain to forget J, Q, X and Z during the next few months of learning. Probably the best procedure would be to teach the alphabet with the exception of J, Q, X and Z in 200 words, to teach Q and X in the next 300, and Z when it actually was first needed, (somewhere in the second 500 words).¹ But it is, in some ways, convenient to have the alphabet done with before going on to the Second Reading book.

Thus for the main body of the alphabet the letters should be introduced approximately in the order of their frequency in the first 200 words. It is not meant that this order should be strictly followed even where it proved inconvenient:² but it might be more useful than no guide at all. If followed in all cases where there is no reason to the contrary, it would probably yield a better result than a mere haphazard selection.

¹ The word "size" is the first.

² It tends to result in rather a deficiency of nouns in the earliest stages.

The actual frequency orders of the letters at various stages of word frequency are shown in the table below. The order of letters in the experimental reading-book agrees most closely with that of the first two hundred words, but the difference between its Rank correlation¹ with that order and the other three orders, is very slight.

EXPERIMENTAL READING-BOOK.		THORNDIKE FIRST 100 WORDS		THORNDIKE FIRST 200 WORDS.		THORNDIKE FIRST 500 WORDS.	
Rank.	Order	Rank.	Order.	Rank.	Order.	Rank.	Order.
A 3	A	A 3.5	L	A 3	L	A 3	L
B 19	E	B 18	O	B 19.5	O	B 18.5	O
C 21	I	C 18	A	C 18	A	C 16	A
D 15	O	D 15.5	T	D 13	T	D 11	R
E 3	U	E 1	H	E 1	H	E 1	T
F 12	S	F 18	N	F 16	N	F 17	N
G 17	T	G 15.5	R	G 17	L	G 15	L
H 8	H	H 5	W	H 5	E	H 10	I
I 3	N	I 9	I	I 9	I	I 8	S
J 23	M	J zero	L	J 23	S	J 24.5	H
K 18	P	K 20	M	K 19.5	W	K 21.5	D
L 20	F	L 10	Y	L 7	U	L 7	U
M 10	R	M 11.5	S	M 14	D	M 14	W
N 9	Y	N 6	U	N 6	M	N 6	M
O 3	D	O 2	D	O 2	Y	O 2	G
P 11	W	P 22	G	P 21.5	F	P 20	C
Q 25	G	Q zero	B	Q zero	C	Q 24.5	I
R 13.5	K	R 7	C	R 8	C	R 4	B
S 6.5	B	S 13.5	F	S 10	B	S 9	Y
T 0.5	L	T 3.5	K	T 4	K	T 5	P
U 3	C	U 13.5	V	U 12	P	U 12	K
V 22	V	V 21	P	V 21.5	V	V 21.5	V
W 16	J	W 8	(J)	W 11	J	W 13	X
X 25	Q	X zero	(q)	X zero	(q)	X 23	Q
Y 13.5	X	Y 11.5	(x)	Y 15	(x)	Y 18.5	J
Z 23	Z	Z zero	(z)	Z zero	(z)	Z zero	(z)

TABLE 72.—The Relative Frequency of the Letters in the first 100, 200 and 500 commonest words in English.

¹ $R = 1 - \frac{d^2}{n(n^2-1)}$; see Rugg. H. O., Statistical Methods applied to Education, 1917, page 234.

MATERIAL SUPPLEMENTARY TO THE READING-BOOKS.

It appeared necessary and desirable to provide as a supplement to the actual reading-books some material free from any interruption of new words or difficulties, in order to produce facility, to give the child a sense of accomplishment, and to let him have a taste of the pleasure which can be derived from his accomplishment. It was not possible to provide narrative material to follow the first Reading-book (which constitutes the first term's work) without the use of new words, since the vocabulary at that point contains only 208 words. Nothing was therefore provided at that point, though actual experience eventually made it necessary to make some such provision there.¹ At the end of the second reading-book the vocabulary contains 444 words; keeping within these 444 words, four stories—two Bengali fairy-tales and two stories from the Arabian Nights—were composed with a total combined length of about 11,000 words. No new words were introduced (except the derivative "Fisherman," the words "fish" and "man" having already been taught). The actual total number of different words used in these stories is 332.

THE SECOND TEACHING EXPERIMENT.

The series of reading-books thus constructed was used with a Class II in a Middle English School in Dacca. The class consisted of 26 boys, the mean true age being about 8 years.² The range of natural ability was very considerable, as has been noted below. On the average the class could recognise $9\frac{1}{2}$ letters of the English alphabet and knew 0·4 English words.

It was not possible to find any class containing a sufficient number of boys whose knowledge of English was absolute zero. The knowledge of boys in Primary Schools was much the same as that of the Middle School class selected, while the classes of these latter were very small and attendance very irregular. The Middle School class was therefore preferred.

THE METHOD OF COMPARISON.

The method of division into an Experimental and a Control class was abandoned at this stage of the work, for two reasons:

1. In view of the irregularity of health and attendance it is impossible to keep a class together throughout a protracted

¹ Namely, the 'Revision' Exercises.

² The mean true age on Dec. 1st (at the end of the course) was 9 years 1 month. See Table 90.

experiment in Bengal. With the method of Controls every absence means a double loss to the experiment, for the absentee eliminates the score of his pair from computation in the final result.

2. Even apart from the above reason the method of Controls is too fine a measure for this type of work. Any good teacher interested in a system of teaching (which is not wholly useless) and anxious to establish its worth, must necessarily prove superior to the same teacher using a method about which he is not really equally enthusiastic, or to any routine teacher on his ordinary treadmill. In order to establish the superiority of a system of teaching it is necessary to achieve not a narrow gain on an "Experimental coefficient"¹ in comparison with classes and conditions of approximately the same quality as those of the experimental class, but a gain of months and years in comparison with the very best classes and teaching (under the very best conditions) of the other kind, a superiority so incontrovertible that the factor of personal error becomes insignificant. Only such proof of a method can eliminate all possible doubt as to how it would fare under more adverse conditions and actuated by a cooler interest. Moreover—a matter of practical importance—such proof only will convince the "Dwellers in the Cave."²

The method of estimating the amount of superiority on this occasion was, therefore, a comparison by means of periodic tests of the experimental classes with the classes of the very best school available in this half of the Province. This comparison makes it possible to say that the experimental method used in average and below-average schools was either inferior or superior by so many fractions of a grade (that is a year's work) to the very best that can be done with the existing method. This is no doubt a less refined measure than the other, but it is more significant over a wider range.

THE METHOD OF TEACHING.

Work was begun on January 7th.

The familiarising of the boys with the form of a new letter is arranged in the reading-book by requiring them to "pick

¹ McCall, W., *How to Measure in Education*, 1922, page 405. See also McCall, W., *How to Experiment in Education*, 1923.

² A term used by Professor Adams in reference to the narrowness of outlook of some members of the teaching profession: Adams, J., *The Herbartian Psychology applied to Education* (n. d.), page 3. The original reference is of course to Plato's Republic.

out" (by underlining) the new letter from among a number of letters already known. The same method is used for new words.

The Lesson Plan in the class was as follows:—

1. Picking out letters (Desk work).
2. Learning new words. (Where "picking out" of new words is set in the text-book, this is done as desk-work. For teaching meanings, the words and their meanings were written up on the blackboard and read over by the class and by individuals: the meanings were then rubbed out, and the list was read again, the boys being required to supply the meanings from memory.)
3. Reading Sentences. (The class read in unison, the speed being gradually increased. Backward boys then read individually.)
4. Reading sentences and giving meanings. (The class and individuals read and gave meanings.)

In Lesson 10 the sentences consisted of written directions. The lesson was taught in the ordinary manner as above. When the sentences had been understood they were written on the blackboard¹ and the class was drilled silently. The drill served for practice in facility of recognition and as an incentive. This proved a successful type of lesson and might have been more used, but I observed in Hyderabad, where Mr. Karim Ahmad Khan Lodhi at my previous suggestion had made greater use of it, that after a time it tended to build up an ill-selected vocabulary, and one not easily applied later to narrative.

In Lesson 11 the first narrative occurs.

The Lesson Plan in the early stages of story-reading was as follows:—

1. Preparation of the questions.
 - (a) The class read the questions.
 - (b) Individual boys gave the meaning of the questions.
 - (c) The class read the questions and gave the meaning of the questions.

¹ Here 'Flash cards' might have been used. They were used in subsequent classes not reported in this book.

2. Finding the Answers.

The boys found the answers to the questions in the story and underlined them.¹ The teacher checked individually.

3. Writing the Answers.

The boys wrote the answers to the questions.

4. Writing out the Story.

The boys wrote out the story in Bengali, the English version being put away. This was done as Homework, the English books being left at school.

ABSENCE OF GENERAL READING ABILITY AS AN OBSTACLE TO THE READING OF ENGLISH.

It was found that in some cases the boys tended to read without grasping the meaning, and were unable to explain the meaning of a sentence of which they actually knew every individual word. Similarly, though they could explain every sentence of the story, they failed in some cases to grasp the meaning of the story as a whole. A test which was made of the vocabulary taught thus far indicated some need of revision: a very thorough revision was made, but there was no notable improvement in the reading-comprehension of the class in the respect mentioned above. At this point the "transference of training" (previously observed in the Intermediate College class) from English to the vernacular suggested that the defect here might not be in English at all, but in 'pure' Reading Ability,—in other words that the boys might not be able to read and understand in Bengali, their own mother-tongue, either. A very simple passage was selected from a story-book (Pouranik Kotha), and questions were set at a density of about 33 (questions per 1,000 words).

The result of the test was that no boy was able to answer any question. A second test was then made at maximum question-density, 125; the result was 31 per cent. answers correct, the time being unlimited. It was clear from this that many of the boys could not read with understanding in their mother-tongue. It appeared therefore necessary for the sake of the English work to give a training in silent reading in the

¹ Vine-stick charcoal was used here, as it is clearly visible for the teacher to check, and it can instantaneously be rubbed out with the finger or with a cloth.

mother-tongue. A class in Bengali Silent Reading was therefore conducted daily from February 26th. The procedure was that of the first Intermediate Class experiment. The density on the first day was 32·5, mean accuracy 31 per cent. The density was raised so as to increase the accuracy till on the 9th day it was 57·2, and the mean accuracy became 61 per cent. It was then gradually decreased, and on the last day was 15·6. The transferred effect to English reading was very marked.

Burt's Vocabulary was not repeated as an after-test as it is not suitable and our own final vocabulary test is superior for the purpose. According to this test, and according to the Training College Vocabulary Test¹ it will be seen that the result of the one term's training has been to make this Class II equal in respect of Reading Vocabulary to a Government School Class III, while the three best boys were equal to Class IV. In considering the mean score it is to be noted that the school in which the experiment was conducted is of extremely low quality, practically the lowest grade of English-teaching school in the town, and it is situated in an inferior locality. The effect of the status of a school on Reading Test scores has been shown above in Chapter 6, Table 29.

Three of the boys (as tested by the Stanford revision of the Binet Simon tests, using a version adapted to Bengal by Satya Jiban Pal, A. K. Dutta and the author) are "Border-line" in respect of General Intelligence.

Name.	True age at the time of the test. Years and months.	Mental age. Years and months.	Intellig nce. Quotient.
20 G. . . .	9/1	5/10	64
19 B. . . .	8/7	6/6	76
10 D. . . .	11/3	9/4	83

For a test of Reading ability a special Kansas Test I was constructed containing no words outside the 208 English words which had been taught.

The test was applied to the experimental class and to Class III of the best Government High School in Dacca. The directions and time were as in the Kansas test. The boys in

¹ That containing four alternatives.

the Government School are the children of a very good class of parents in many of whose homes English is spoken, and in some cases their English vocabulary was very large, *e.g.*, 530 (midway between the norms of Class IV and V), 510 (IV-V), 575 (IV-V), 320 (III-IV). All words in the test likely to be unfamiliar to the boys of the Government Schools were taught beforehand, and the vocabulary was left on the blackboard.

The two classes were practically equal (Experimental 0.6, Government 0.75) but the scores were low. It appeared possible that this low score in the case of the experimental class might be due partly to the unfamiliar type of question and material. In the case of the questions on stories, the answer was to be found and underlined in the story, whereas in the Kansas test in some cases the actual word (*e.g.*, "No") answering the question does not occur in the paragraph: but the boys of the experimental class, having had experience of no other type of question, had looked for the answer among the actual words of the paragraph¹ and, not finding it, were confused.

It appeared from this that at end of the first term's work there should be some practice in dealing with questions of various types, including some which involve reasoning from the passage presented. Two hundred exercises of this kind were devised, all being within the vocabulary already acquired. One week's practice was given to the class (using about fifty of the exercises in all) and the test was repeated. The very marked improvement on this second occasion in the case of the better boys (No. 1, 2, 3, 4, 5, 6, 7, 21, 22, 26) appears to indicate that the defect on the first occasion was actually due to the unfamiliar type of reading situation rather than to defective reading ability. In cases 11—17 and 20 whose progress both in vocabulary and in reading had been unsatisfactory and of whom five (11, 12, 14, 16, 20) could not as yet read their own mother-tongue efficiently, the additional training had little or no effect. The mean score was now 2.8; this is about mid-way between Class IV (1.2) and Class V (3.5) of the school selected as criterion, a gain which would normally have taken 2½ years, effected in 82 working days, or about 17 weeks.

The improvement of the non-experimental class on the second test was 0.06.

¹ The answers were of course in all cases, both in class and in this test, written in Bengali.

THE THIRD TEACHING EXPERIMENT.

It was unfortunate that the boys of the class selected for the second experiment should have been deficient in reading ability in the mother-tongue, and so extremely unequal in "General Intelligence." It was however possible, possessing as we did an efficient technique for the purpose, to retrieve to some extent the deficiency in pure reading ability, but the objection still remained that it was not possible to argue from the results of this rather exceptional class as to the results which might be obtained with a class more normal both in reading ability in the vernacular and in "Intelligence."

Nevertheless I decided to carry on this class in order to see what results could be obtained under these exceptionally unfavourable conditions, since one of our main arguments for the emphasis of reading in teaching English to Bengali boys is based on the needs of the below-average boy. But it was obviously necessary also to undertake the teaching of another class in order to see what would be the effect of this method of teaching on a more representative collection of boys. For this purpose the lowest class of the Practising School was taken, (Class III).

The initial tests were made in July, the beginning of the second term. The Mean Vocabulary of the class was 216 words (mean of the paired seventy-word Thorndike tests). On Burt's Directions the mean score was 0.9: on the Special Kansas test all the boys scored zero. In fact the class knew the alphabet and had the normal vocabulary of their grade, but possessed practically no reading ability in English.

The reading-book and teaching method used were the same as before. The revision exercises had now been embodied in the reading-book and were used after completion of the rest of the book. As this class already knew the alphabet and was much better graded than the former class, progress was considerably more rapid, and the first book was finished in 50 days. The same End-test (the Special Kansas) was then used, and the mean score of the class was 4.7 answers correct. The nearest corresponding scores in the Collegiate school were Class V (3.5) and Class VI (5.9). Thus this experimental class was exactly mid-way between these latter two classes.

In other words they had made an advance in reading ability equal to the normal advance made in two and a half

years. As stated above an equal advance had been made by the former experimental class (Class II).

COLLEGIATE SCHOOL.		2nd Experimental class, (Class II).	3rd Experimental class, (Class III).
Class.	Answers right.		
VII . .	8.2	..	..
VI . .	5.0	..	..
	.....	.....	4.7 (Class 5½).
V . .	3.5		↑
	.....	2.8 (Class 4½)	
IV . .	1.2,	↑	
III . .	0.8*	0.6	Class 3
II . .	..	Class 2	..

TABLE 73.—Results of Special Kansas Test I in the Second and Third Experimental Class and in the Classes of the Collegiate (Government) School.

SUMMARY.

The importance of experiment in the method of producing silent reading ability in a foreign language is emphasised by the recent report of the Board of Education and by most writers on the method of foreign language teaching.

It does not appear that active power over the language is a necessary preliminary. Existing methods of language-teaching are therefore inapplicable; it is necessary to evolve a new procedure.

The purpose of the First Experimental Class was to evolve a form of procedure which could, given a class already knowing the alphabet and given the reading materials available in the market, supply efficient practice in English reading.

The difficulty which immediately presented itself was the treatment of unfamiliar words. So far as was possible the teacher anticipated what words would be unfamiliar and taught them in advance; but correct prediction was not always possible, and as a result of the failure of this procedure to allow sufficiently for such unpredicted words, during the first term the Experimental Class showed no marked improvement over the group of boys used as a 'Control class.'

Improvement of the procedure in this respect resulted in a considerable gain; but it was obvious that the main obstacle to further progress lay in the reading material, in which no attempt had been made to grade or control the vocabulary.

Before a second teaching experiment could be initiated, a detailed examination was made of the defects of existing English reading material

* (First test 0.75. Second test 0.81.)

in common use in Bengal. A series of 'Criteria' was evolved which might act as a standard both in judging existing material and in constructing new.

With the aid of the results of this survey a series of reading-books was specially constructed to cover the first year's work in English.

The Second and Third Experimental Classes were conducted with this material. The standard used for comparison was the result of periodic tests of the various classes of the best Government High School in this half of the Province. The class chosen for the second experiment was Class II of one of the weakest Middle Schools in the town: this choice was made in order to obtain a class having as little initial knowledge of English as possible. This selection subsequently gave rise to certain unexpected difficulties, *viz.*, the boys were not only backward in English but were generally backward and were unable to read the vernacular efficiently. In order that the English work might proceed, this defect had to be remedied. Some of the boys of the class were of so low a degree of intelligence as to be almost unteachable even in the mother-tongue.

In spite of these difficulties, on the completion of the first reading-book (after sixteen weeks, 77 working days) the results of the tests were equal to those of Class III of the school selected as criterion. After completing the Revision Exercises (one week later) which were designed to give special practice in dealing with more varied types of reading situation, the results were mid-way between Classes IV and V, a gain of 2½ years in seventeen weeks.

The Third Experimental Class was Class III of the Practising High School of the Training College. Starting in July with almost zero reading ability, the results of their tests made early in September were mid-way between Classes V and VI of the selected school, a similar gain of 2½ years, but accomplished in a shorter time (*viz.*, ten weeks, 50 working days), the difference being due to the fact that this class knew the alphabet, and was both of higher average intelligence and of more equal quality.

CHAPTER 10.

The Teaching of English Reading to Bengali boys (concluded)..

From the end-test of Book I the classes proceeded directly to the second reading-book. This book consisted of stories and informative articles. On an average the stories and articles ran to three pages of medium sized print, containing about 500 to 1,000 words. The passages were not divided into sections, but a "Companion" booklet broke up the passages into units of about a page each, and supplied for each such unit a list of questions covering the main points, a list of the new words which occurred in the unit, and (at the end of the book) a list of these new words with their vernacular equivalents, unit by unit, and, also, alphabetically for the book as a whole.

THE PROCEDURE.

The procedure eventually devised for Reader II was as follows:—

A. Learning the New Words of the Section.

The words were written up on the blackboard with their meanings. The words and their meanings were read in unison several times. The meanings were rubbed out, and the list was read again, the meanings being supplied from memory.

B. Preparation of the Questions.

The questions were written on the blackboard. The class read a question silently. A boy was then asked to give the meaning of the question; the class repeated the question and its meaning.

C. Finding the answers.

The teacher indicated the unit to be read and the boys marked it in their books. The teacher then gave the order to begin, and the boys started reading, finding the answers to

the questions, underlining them in charcoal and putting the number of the question in the margin.¹

As soon as a boy finished finding the answers, he stood. The teacher then went to him, and if any underlining was incorrect, rubbed it out: the boy then sat down again to find the correct answer. If all the underlinings were correct, the teacher turned the boy's book face downward.

D. Reviewing the answers.

When all had found the answers, the teacher gave the order to turn the books up. He then read over the questions and the boys silently looked at the underlinings and reminded themselves of the answers.²

E. Writing the answers.

The teacher gave the order to turn the books down and write the answers. The teacher, assisted by the first boy who had succeeded in getting all his own answers right, corrected the answers of the boys as they finished.

F. Telling the story.

A boy was called upon to stand out before the class and tell the story contained in the section just read. (Sometimes two sections were taken together for this step.)

THE REVISION EXERCISES.

The purpose of these exercises was to revise the vocabulary in the act of reading and to increase the rate of the reading so as to ensure the use of the Direct Bond. They consisted of short units with Before-questions.

It will be remembered (see the Appendix to Chapter 5) that adult readers were found to use the Indirect Bond only in words which gave them difficulty. The Direct Bond is essentially a matter of facility: we do not tend to translate words which are well-known and easily recognised; we do not translate when we are reading rapidly and easily. Much of the practice work

¹ Actually units smaller than those indicated in the 'Companion' were used: see below on the size of the Unit, page 305. In order to lessen the size of the unit it was sometimes necessary to add extra questions.

² On the reason for this procedure, see below on the Size of the Unit.

in building up the vocabulary is not done at a high speed, for speed-work is not possible where comprehension has to be ensured and new words introduced. When the vocabulary has been built up it is necessary therefore to give practice aiming at familiarity and facility, in order to ensure the direct connexion between the foreign word and the idea.

THE SUPPLEMENTARY READERS.

These stories contained no new words. They served as the end and application of the year's course.

If the course has been successful, the class (or at any rate all the better and average boys) should be able to read these at sight and understand them using the Direct Bond. As they were the finale of the course and the searching attitude should now have been established, they were used with After-questions. The boys were told "Read the section, and think what sort of questions I shall ask."

When they had finished reading, questions were asked and the answers were written. The papers were corrected as each boy finished, and the correct answers to questions wrongly answered were searched for again in the book by each boy. The substance of the section was then told by a boy standing out in front of the class.

* * * *

Such was the material and the general procedure of the second and third term's work. Reader II was finished by Class III in 34 days, by Class II in 46 days, and the Revision exercises were completed within six days, but only one of the supplementary stories was read in each class. The reason for this omission was that Class III started a term late (that is in July instead of in January), and for a Class II of the quality of the second experimental class the course is really a four terms' course. (English is not ordinarily taught in Class II: the course is intended for Class III, and the Class III could certainly have finished the whole had they had the three terms.)

During the whole of this part of the course Class II continued to practise Bengali reading. Vernacular reading practice was also introduced into their History course. The means of the last three days' work were *Bengali*:—Density

23, Speed 35, Accuracy 72: History:—Density 26, Speed 36, Accuracy 73.

The figures of which the means are given above include the scores of four very "backward" boys on whom it was very difficult to produce any effect in any subject. Their reading Comprehension was below 50 per cent. Sixty-seven per cent. of the class in each subject reached 70 per cent. Comprehension. Thus, though considerable progress had been made, the insufficiency of the boys of this class in their own mother-tongue was still an obstacle to their work in English.

THE MENTAL PROCESS OF THE BOYS IN READING ENGLISH.

It was curious to observe that, although no "Reading aloud" was practised, the boys in both classes when tested in oral reading were found to read aloud in English with remarkable and unusual fluency. In the early stages all the boys used lip movements and vocalized as they read, and this practice had apparently served as "transferred" training in reading aloud. If this be so, since all reading was done simultaneously by all the members of the class, the individuals of the classes had more practice than is usual, for no reading-time was spent in merely sitting and listening to someone else reading.

The point however arises to what extent silent reading was ultimately used by the boys, and what was their mental process in the practice classes. This point was studied by going round during the process of the reading and observing the procedure of each individual boy. In the first place it was noticeable that at the beginning of the course in both classes, when reading commenced, there was a buzz so loud as to be a disturbance to the class next door; but, as the work reached a more advanced stage, this noise, of itself, became gradually less, although no steps were taken to discourage vocalization. At the end of the year there was only a low hum, and individual observation showed that this proceeded from the more backward boys. In the case of the most advanced boys there was no sound at all, and in some cases no perceptible lip-movement; in the less advanced there was lip-movement but no sound: the more backward boys muttered or even spoke. A similar difference was observed in the movement of the finger along the lines. It will be remembered that during the reading the

boys were holding sticks of charcoal and underlining the answers to questions; hence there was a natural tendency to follow the line of print with the charcoal ready for underlining. The crayons of the backward boys proceeded in short jumps from word to word, while the better readers made a smooth narrow zig-zag, or kept their hands motionless at the side of the page save when an answer was being underlined.

On November 18th, one month before the end-test, an individual scrutiny and enquiry was made in Class III in order to discover to what extent boys were reading English with the direct bond between the English word and the idea, and to what extent they were translating. Fifty-three per cent. of the class (17/32) were reading English and gathering the ideas with no interposition of Bengali: thirty-one per cent. (10/32) were translating, and there were five very backward boys, whose reading was at a very low level, and whose process could not be analysed. At this point the boys were advised that they would get on better if they endeavoured to avoid translating when they read. Another observation was made on December 3rd, and all the ten boys who had previously been translating were now reading with the direct bond; but the five backward boys were still doing nothing very definite.

THE CONSTRUCTION OF THE END-TESTS.

It has been laid down as a principle that the essential of a successful method in the teaching of reading in a foreign language is that the child should, at the earliest possible stage, be enabled to read with ease and pleasure. It is not reasonable to expect that a child should read with greater facility in a foreign language than in the mother-tongue; but we may aim at the result that a child should, within his more limited vocabulary read with as nearly as possible the same facility in the foreign language as in the mother-tongue. Since however the norms of speed of reading in various languages no doubt differ, the criterion to be used must necessarily be the speed-norm of the children of the required age whose mother-tongue is the language under consideration. We may therefore aim at the ideal that the child should read with as nearly as possible the same facility in the foreign language as that with which the normal child of the same age whose mother-tongue is that language, can read in his mother-tongue. This ideal, though no doubt impossible of complete attainment,

is a definite and absolute criterion having reference to any language and to any foreign people who may be learning it.

We may therefore revise those reading tests of which we possess age-norms in the foreign language as a mother-tongue, eliminating all words outside the vocabulary of the foreign child, but keeping the substance, question-density and distribution of questions exactly the same as before, and use these tests for obtaining a comparison with the absolute criterion given above.

This was actually done. The tests used were Kansas Form I, and C.B. I and II. The Kansas Test was rewritten keeping (within ± 1) the same number of words in each paragraph, but all words outside the 444 words taught in first and second reading-books were excluded, thus:—

KANSAS ORIGINAL.

The carp is a fish that lives in the rivers of Japan; it can leap high out of the water and jump over rocks; it can even leap over waterfalls, and swim against a strong current. If you think the carp is a strong fish, draw a line under the word "carp"; if not, draw a circle round it.

Carp Number of words 60.

SPECIAL KANSAS.

The carp is a fish that lives in the rivers of Japan; it can make its body go high out of the water; it can go over stones. It can go through the water very far and very quickly. If the carp is a strong fish, make a line under the word "carp": if not, make a ring round it.

Carp Number of words 61.

Part I of the C.B. test was translated into Bengali, and Part 2 was rewritten in English in the same manner as that described above.

This Absolute Criterion, though likely to be a valuable instrument at a later stage, was not at this stage very useful, inasmuch as none of the tests at our disposal yield a reliable measure below the age of nine years, whereas the mean True Age of the Experimental Class was 9 years 1 month. Hence very few of these cases came within range of comparison with

the English mother-tongue norms, and the C.B. norms at these ages are based on insufficient numbers of tests.

Name.	True age.	Special Kansas score	Nearest Kansas norm score	Grade age of the Kansas norm.	C B I score.	Nearest C B norm.	Age of C B. norm years.	C.B. 2.
Sil, H. M.	8/1	9	9	10.2	112	..	..
Basu, A.	7/11	10	9	10.2	103	101	9 C—10.5	
Pal, S. N.	8/7	9	9	10.2	131	..	..
Boy, M.	8/1	6	7.2	9.7	143	..	..	None comparable.

TABLE 74.—True Age, Kansas Age, C.B.1 Age, (and C.B.2 Age) compared in Experimental Class III, End-test.

NOTE.—C. B. 1 was given in *Bengali*.

(The table is to be read as follows:—H. M. Sil, whose true age was 8 years 1 month, obtained a score of 9 points in the Special Kansas test; this score on the original Kansas test is that obtained by the normal American child aged 10 years 2 months. On the C. B. test H. M. Sil's score does not correspond to any norm. The score of A. Basu on the C. B. I test corresponds to that obtained by the normal Anglo-Indian girl aged 9½ years to 10½ years.)

A point of interest which arises in this connexion is whether the lowering of the Vocabulary Index of a test affects the norms of the test. The Armenitola Practising School was not tested in the original measurement by the C. B. test, and its classes are of every unequal quality. However, comparing the Dacca Collegiate School with the norm of the "A" Schools (see Table 29) we find;¹

—	'A' Schools.	The Dacca Collegiate School.	'A' Schools.	The Dacca Collegiate School.
Norm on	Original Kansas test.	Special Kansas.	Original C.B. II.	Special C.B. II.
Class—				
10	12.2	12.4	84.7	60.8
9	8.8	9.2	97.6	95.5
8	7.7	7.4	114.1	130.7

TABLE 75.—The Effect on the Norms of lowering the Vocabulary Index of a Silent Reading test.

¹ The classes when tested with the special tests had finished their examinations and had been promoted. In some schools they actually begin the work of the next year at this point. Hence the Class 9 tests with the special test is in reality Class 10 and, is therefore compared with the Class 10 norm. Equal scores therefore mean that the special test is easier by about one term.

Thus the Kansas test remains fairly constant, but the score in the Special C. B. test is better in Class 10 and worse in Class 8. The number of cases of the Special test is too small to yield a sufficiently reliable mean for this comparison. The point is being further investigated.

The Results of the End Tests.

The results of the tests are shown in Tables 90 and 91 in the Appendix. They may be summarised as follows:—

Experimental Class II.¹

Kansas Test.—The mean “Comprehension” score of the Experimental Class II was just below that of Collegiate Class IV.

C. B. 2 Test.—33 per cent. of the boys of the experimental class qualified in the test: this is a larger proportion than that found in Collegiate School Class V. The mean rate of those who qualified was superior to the mean rate of those who qualified in Collegiate Class V.

Experimental Class III.

Kansas Test.—The mean “Comprehension” score was equal to that of Class V of the Collegiate School.

C. B. 2 Test.—42·9 per cent.² of the Experimental Class III qualified in the test: this is approximately equivalent to the percentage of Class VI (43·5).

The mean rate of those who qualified was superior to the mean rate of those who qualified in Collegiate School, Class V.

A comparison was made also with the Armenitola School (the practising school of the Dacca Training College). The classes of this school are of rather unequal quality; Class VII is extremely weak and Class VI unusually strong.

Experimental Class II.

Kansas Test.—The mean score was just above that of Armenitola Class IV.

¹ It is to be observed that in Class II during the course of the year nine boys left and five entered. Special arrangements were made for late-comers to catch up with the work; very late comers are, however, not shown in the first table of results in the Appendix.

² One boy qualified as to Comprehension but not as to Time. If his case be included the percentage is 46·4.

In respect of English Reading two Experimental Classes taught by New Method each gained two years in one year, or less.

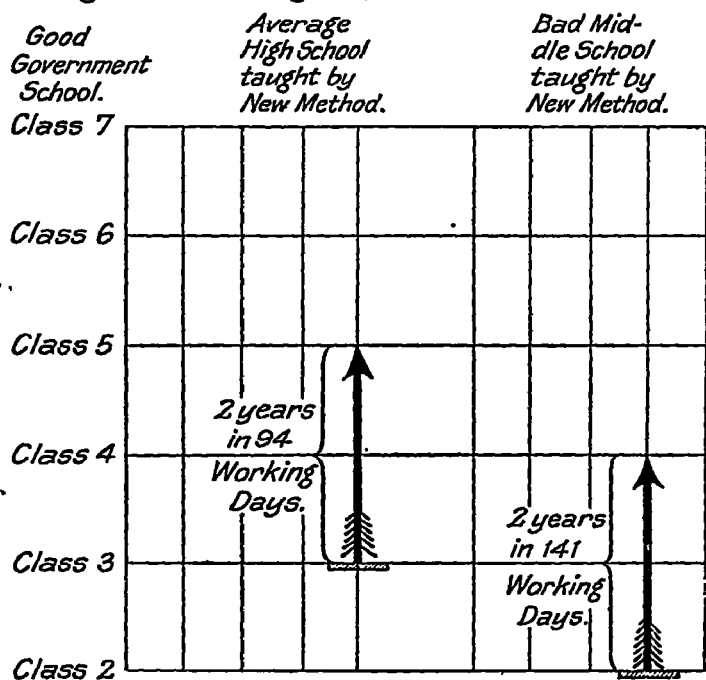


DIAGRAM 10.

C. B. 2 Test.—The percentage of the boys who qualified in the test was superior to that of Armenitola Class IV, and the mean rate of those who qualified was superior to the mean rate of those who qualified in Class IV.

Experimental Class III.

Kansas Test.—The mean score was superior to that of Class V, was near to that of Class VII, but was not superior to Class VI.

C. B. 2 Test.—The percentage of boys who qualified was equivalent to that in Class V (Exp. III 42·9: Arm. V 43·5). The mean rate of those qualified was superior to the mean rate of those qualified in Class V.

On the Vocabulary test the mean score of Experimental Class II was 411·3 words. The initial score before teaching was—on other tests—less than one and the actual number of words taught was 444. The mean score of Experimental Class III was 672·7 words. The initial score on this Vocabulary test was 216 and the number of words taught was 444, Total 660. Thus the estimate made by the Vocabulary test is curiously exact. The mean score of Experimental Class II was most nearly equivalent to the norm of Class IV (389); that of Experimental Class III was midway between that of Classes IV and V. The Vocabulary Test was originally applied towards the end of the first term: the experimental classes were, when tested, just about to begin the first term of their next year; thus the Vocabulary of Class II is about $1\frac{1}{2}$ year advanced and that of Class III $\frac{5}{6}$ of a year advanced.

SUMMARY OF THE RESULTS OF THE EXPERIMENT.

In general it may be said that the training has produced a two years' gain in Reading, and a one year's gain in Vocabulary beyond the normal. This gain was achieved by Experimental Class II in one year's work (three terms, 141 actual working days), by Experimental Class III in two terms (94 actual working days).¹

¹ Taking the teaching of English reading as one-sixth of the total cost of Class III to the Province, this being about its proportion in the timetable, this gain of two years would represent a saving to the Province of Rs. 2,00,000 odd per annum. (£13,000.)

NOTE.—The Experimental teaching took place in the periods normally devoted to the English text-book. English Composition and Dictation were taught as usual and progress in these respects as judged by the annual examination of the schools was normal.

THE RESULTS OF THE TESTS IN THEIR BEARING UPON THE
"SURRENDER VALUE."

In our original discussion of the Bengali's need of English (in Chapter 5) attention was drawn to the importance of making the study of the English language yield a sufficient "Surrender Value" to the Bengali boy who leaves school prematurely after one, or two, or three years. Success in this aim must necessarily be one of the chief criteria of the results achieved.

Let us suppose that all the boys in these two experimental classes had left the school at the end of the year, and enquire how many of them appear to have gained something definite or permanent by their study of English, or to possess the power of continuing these studies or to be likely to continue them by their unaided efforts in leisure time. We may take it that a child who can read an English story at a reasonable speed and take in a reasonable proportion of the substance has attained some definite and probably permanent achievement in the language, could continue his studies unaided (given suitable books), and would probably derive sufficient pleasure from reading stories in the foreign language to be likely to continue his studies. On the other hand a child, who in five minutes cannot read even one short paragraph (out of a number presented) and answer a simple question on it, cannot be said to have as yet reached any definite achievement, and would probably be unable to continue his study without tutorial assistance.

Now the C. B. test requires a child to get 75 per cent. of the substance of a simple story within a reasonable time: ability to qualify in this test may be taken as evidence of definite ability to read. The first part of the test was given in the vernacular; the second in English: hence ability to qualify in the C. B. 2 test may be taken as evidence of ability to read English. The Kansas Test requires a child to read and answer questions on as many short paragraphs as he can in five minutes: failure to give a single answer correctly may be taken as evidence of definite inability to read in any usable degree.

Further, as regards those who have neither qualified in C. B. 2, nor secured any score in the Kansas test, we may observe whether they have succeeded in qualifying in the C. B. test even in the vernacular, their mother-tongue; for if they have not (considering the amount of attention devoted to reading in both classes and the actual specific training in verna-

cular reading given in Experimental Class II), it must appear highly probable that these boys will never succeed in learning to read a second language: they will be fortunate if they succeed in learning to read their own language with any degree of efficiency.

Judging by these standards we reach the following interpretation of the results of the tests of the experimental classes in their bearing on the question of Surrender Value:—

1	2	3	4
Percentage who definitely can read English.	Percentage who are doubtful.	Percentage who definitely cannot read English.	Percentage who probably never will read English.
(Qualified on C.B. 2)	(Failed in C.B. 2 but scored in Kansas.)	(Failed in C.B. 2 and scored zero in Kansas.)	(Failed in C.B. 2, zero in Kansas, failed C.B. 1.)
Class III 42.9 per cent	Class III 46.4 per cent.	Class III 10.7 per cent.	Class III 10.7 per cent.
Class II 33.3 per cent	Class II 33.3 per cent.	Class II 33.3 per cent.	Class II 23.8 per cent.
Combined class 38.7	Combined class 40.8.	Combined class 20.4.	Combined class 16.3.

TABLE 76.—Percentage of boys in the Experimental Classes who have and have not obtained English Reading ability as a result of one year's work (for Class III two terms work) with the Experimental Method.

It is more than probable that the second group above, "Doubtful," could with another year's work on these lines, obtain definite reading ability in English. (Indeed another term in Experimental Class III, completing one full year, would have sufficed for many of them.) Hence we may say that, given an efficient method, efficient textbooks and a reasonably efficient teacher, *it is possible to give such reading ability in English as constitutes a permanent, usable and improvable possession within one year to about forty per cent. and within two years to eighty per cent. of an average class of Bengali boys. Of the remaining twenty per cent., sixteen are boys of*

natural ability so much below normal that they have difficulty in mastering the reading of their own mother-tongue. It is questionable whether the study of a foreign language can—even in the bilingual conditions of Bengal—in their case be recommended.

THE FUTURE OF THE WORK.

The task which now remains is that of constructing a complete series of reading-books from the initial stage as far as the point where a vocabulary of 5,000 words has been built up.¹ (The present vocabulary of the Matriculation class contains that number of words.) It has been seen in Chapter 8 that it is possible without excessive alterations to revise any ordinary not very technical matter so that it may contain no word which is unfamiliar to a boy who has learned those 5,000 commonest words. Thus, given such a vocabulary and a literature so edited, for a boy discontinuing his education after the Matriculation class the Age Discrepancy in respect of the English books which he will be able to read will have been reduced to zero, and the Surrender Value of the subject should be nearly cent. per cent.

In the earlier stages when the vocabulary has reached 500, 1,000, 2,000, etc., words similar libraries of supplementary reading material will have to be provided, so that after each year's work there may be available to the child a set of books in the foreign language which his year's work has enabled him to read with pleasure and without interruption,—to read in an arm-chair without a dictionary.

We do not suggest that the reading-books actually used in the experimental classes, should be used as the first two reading-books in the series which we desiderate. These books were explicitly experimental. The experimental work for which they were designed has confirmed the principles upon which the books were constructed; it was not expected that it should confirm them in detail; rather that, if the principle proved sound, it should enable us to criticise them and suggest the details of something much better which might be constructed in the future.

¹ It is, of course, probable that the rate of increase of vocabulary in classes taught according to this system will exceed the rate set out in Table 62. Hence 5,000 words, the present vocabulary of Class 10, would be attained in less than the eight years, that is, before Class 10. If this be so, it should be possible to carry the series to a higher vocabulary level within the school course; to precisely what level only actual experience will reveal.

The experiment has revealed the defects of the present books. The reader will not be interested in detailed criticisms In a new series it will certainly be possible to build up a better selected vocabulary. It will be possible to introduce questions and short paragraph exercises at a much earlier stage. The questions on the stories could be improved and better spaced. The stories themselves could be more judiciously selected.¹ It is possible that informative and descriptive articles should be omitted from the first and perhaps the second year's work, because experience has shown that, if the article is made of such novelty and complexity that it gives information which the child did not know before, new words of low frequency-value can hardly be avoided at this stage of the vocabulary;—such informative articles might be used later when the vocabulary is larger.

These are details. A textbook is never finished, because the teaching of every new class² reveals new respects in which the book might be improved. School textbooks should be kept, as H. G. Wells³ suggested twenty years ago, always standing in type, and no edition should exceed a year's demand. For every obscurity of the book is rebuked thousands of times by thousands of little victims of the author's carelessness or stupidity.

THE SIZE OF THE UNIT IN MATERIAL FOR READING PRACTICE.

One point of criticism is both of general and of theoretical interest. In the original edition of the first Reading-book each story was printed as a whole, and the questions on it (eight or nine in number) were set opposite. It was found necessary in

¹ It is interesting to note that the stories in the experimental reading-books which proved most popular with the children were, not necessarily those of Indian or Bengali origin, but those which, even if European, are of international reputation. On this point, see Uhl, W. L., *The Materials of Reading*, 1924, Chapter VI.

² Arrangements were made with a number of schools to use the experimental reading books and report progress, in order that the difficulties and misunderstandings of the average teacher in an average school might be noted for guidance in the future. As a result many most valuable suggestions and criticisms have been received.

³ *Mankind in the Making*, 1903 (cheap edition, 1914, page 322). Wells raises the larger question whether private enterprise is a suitable means for the production of school textbooks: the present writer agrees with him that it is not. School textbooks might be produced in a special section of the Department of Education in a University, published by the University Press, and the profits devoted to research in education, especially with a view to the improvement of textbooks. But this is Utopian.

actual practice to break up the questions into groups of two or three and to divide the story into corresponding units, the reason being that, although the boys could find the answers to the questions in the larger unit, they did not seem able to remember them.

It will be recollected that in Chapter 6 a curious discrepancy was observed between the percentage of correct underlinings and the percentage of correct written answers in a reading-test. The possible significance of this discrepancy was not realised till nearly two years later, when a peculiar difficulty of the boys in studying the reading-books was observed. In the reading of a foreign language (possibly where the active power over the language is less than the receptive,—or possibly in all cases), the ideas gathered seem to have a peculiar instability, a peculiar evanescence, so that although reading with complete comprehension may proceed over a unit of unlimited size, when the reader comes to review what he has read, a larger proportion of the ideas seems to slip away than in a similar situation in the mother-tongue. In the case of a reader who is reading with a direct bond (word-to-idea) in one language, and reviewing with a direct bond (idea-to-word) in another language,¹ at one moment the ideas must exist in a disembodied condition. It is possible that in that moment they are particularly liable to disintegrate.

Be that as it may, it seems necessary in the case of a foreign language, to use rather shorter reading-units and to review the substance of what has been read at rather more frequent intervals than in the case of the mother-tongue. This procedure does not involve any actual loss of time or of effort, while if it is not followed there is liable to be an undue loss of ideas gathered in the reading. It was for this reason that the rather peculiar procedure described above in reference to the work on the second reading-book was adopted, *viz.*, the direction to "Read and underline the answers,"—and, on the completion of the underlining,—"*The teacher reads the questions and the boys silently look at their underlinings and remind themselves of the answers.*"² Possibly underlining followed by review done in short units is the most efficient way for the adult to read a foreign language, especially one in which his speech is not as facile as in the mother-tongue.

¹ See Appendix to Chapter 5, above, "The Psychology of pure Reading Ability in a Foreign Language."

² See page 294, above.

It appears probable that increase of practice in the reading of a foreign language (without increased active facility) tends to produce an increase in the size of the unit. Moreover, it is probable that the size of the unit can be increased by specific practice designed for the purpose, *viz.*, reading with units of gradually increasing length.

In the early stages of story-reading units of 60 to 90 words were the largest with which the class was found capable of dealing: whereas in the later stages the boys were dealing with units of 150 to 200 words. It follows that the reading-books should have been constructed accordingly, with units of gradually increasing size. A great deal of unnecessary trouble might have thus been saved.

This view is based only on observation of the classes and subsequent trial and introspection by the author. It has not been possible as yet to establish experimentally either the nature or the amount of the difference between the maximum size of the Unit of Reading in the mother-tongue and in a foreign language,—though the experiment on Underlining and Not-Underlining indicates that there is a real difference. Further experimental work on the subject is in progress.

SUMMARY.

The whole course of experimental teaching was completed by Experimental Class II in 141, by Class III in 94 days. It was observed that vocalization and lip-movement automatically decreased with the increase of facility. Individual investigation showed that 53 per cent. of Class III were reading using the direct bond. A warning was given against translating and shortly afterwards all except 16 per cent. (very backward boys) were reading with the direct bond.

Ideally a Bengali boy of nine years old should, within his vocabulary, read English with the same facility as an English child of the same age (and so with other ages.) The idea underlying the construction of the End-tests for these two experiments was to test how far this ideal had been achieved or could be achieved in future stages of the work. (At the present stage the classes were too young for the scores of many of the boys to fall within the norms of the tests.) The Kansas test and C. B. 2 test were, therefore, rewritten so as to contain no words outside the vocabulary of the experimental classes. It does not appear that this has very appreciably affected the norms of the Kansas test: the effect on C. B. 2 is as yet uncertain.

Simultaneously with the testing of the experimental classes a test was made of the Collegiate School (the best school in the town) and the Armenitola School (the practising school of the Training College to which the Experimental Class III belongs). The net result of a comparison of the test results of the two experimental classes with the scores of the classes of these two schools is to indicate a gain of two years in respect of Reading (that is, Class III is equal to Class V, and Class II to Class IV)—and of one year in respect of Vocabulary.

In reference to the question of the "Surrender Value" of English teaching discussed in Chapter 5 above, it appears from these experiments possible to give such reading ability in English as constitutes a permanent, usable and improvable possession to about forty per cent. within one year, and within two years to eighty per cent. of an average class of Bengali boys.

A point of some theoretical interest is that ideas gained in the reading of a foreign language appear to be peculiarly evanescent, and that the size of the Unit of Reading must be proportionately reduced in reading-books used for teaching reading in a foreign language.

The task now remains of constructing a complete series of reading-books embodying both these principles as well as improvements of detail based on the teaching experience recorded above. It will be necessary to start out again from the initial stage and carry the work up to the end of the school course, up to a vocabulary of 5,000 words (or more, if experience shows that higher rate of progress is possible). When this has been achieved a Bengali boy may hope to possess by the end of his High School course the power of reading any ordinary book in English (after a minimum of editing) with ease and enjoyment.

* * * * * *

FUTURE INVESTIGATION OF THE PROBLEMS OF SPEECH AND WRITING ABILITY IN ENGLISH, WITH SPECIAL REFERENCE TO THE BENGALI.

There is a danger that the present book may create a false impression in the minds of some, especially in Bengal. The author may be accused of advocating a "dumb" knowledge of English, so that "Bengalis will not learn to speak English and their command over English as a means of expression will become even less than it is at present," etc. It is necessary that this misapprehension should be anticipated and removed.

We have argued that the acquisition of reading ability in English is necessary for all Bengalis who aspire to more than a minimum of education: we have made experiments in order to discover whether the acquisition of this power is feasible for *all* in the short time which is available to all, and have found it, in general, to be so. The position of instruction in speech and writing in English remains in the curriculum almost precisely where it was: these abilities are needed by *some*; the teaching of them is unaffected by the introduction of the methods of teaching reading which we have advocated.¹

Doubtless exact methods of investigation will in the future bring forth a system whereby the Bengali may, at a cost of

¹ The teaching of these subjects will be affected in one way. We have endeavoured to show that the acquisition of reading ability is psychologically the most correct first stage in the study of a foreign language for purposes of speech and writing; increase of efficiency in this initial stage will render the later progress in speech and writing more rapid and the student's ultimate use of the language more accurate. See 'Learning to read a Foreign Language,' 1926, page 5.

relatively less effort than at present, obtain a more ample and more exact fulfilment of his real needs, such as they are, of the power of writing and speaking in English. We have not professed nor attempted to investigate these matters. We have asserted that the first, most urgent and most universal need of the Bengali is of reading ability in English; we have made the investigation of methods of producing and improving this ability our first and most urgent responsibility. The investigation of problems connected with the less urgent and less universal needs, of speech and of writing, may be undertaken by us or by others at a later date.

APPENDIX TO CHAPTER 9.

Test Results of the First Teaching Experiment.

Name of pupil.	First Test (January 1923).				Second Test (May 1923).				Name of pupil.
	Burt's Directions.		Burt's Vocabulary.		Burt's Directions.		Burt's Vocabulary.		
	Expt.	Cont.	Expt.	Cont.	Expt.	Cont.	Expt.	Cont.	
1. Manik . . .	1.0	3.5	20	26	...	...	...	...	Tetera.
2. Susil . . .	4.5	5.0	18	21	2.5	4.0	21	16	Jitendra.
3. Sunaravdra . . .	2.75	3.0	18	19	3.0	3.0	21	21	Jyotirmay.
4. Pradyot . . .	2.25	2.0	15	18	2.0	1.0	15	19	Gandheram.
5. Chhida . . .	1.5	1.5	10	10	2.0	1.5	13	11	Ashutosh.
6. Kavin . . .	1.0	1.0	10	12	...	3.0	...	14	Parimal.
7. Anjad . . .	1.0	1.0	8	8	2.0	2.5	11	10	Amulya.
8. Halipada . . .	1.0	1.0	6	6	3.0	2.5	21	18	Robini.
9. Barendra . . .	.75	.75	7	8	2.5	1.5	17	10	Sukhada.
10. Amarendra . . .	3	0	6	6	...	...	...	...	Nibir.
Mean . . .	1.0	1.0	12.4	13.2	2.4	2.3	17	16.7	
Superiority of Experimentals to Controls.	Nil		—0.1 per cent.		6.25 per cent.		1.7 per cent.		

TABLE 77.—First Teaching Experiment, Results of the First and Second Tests,

THIRD TEST (OCTOBER 5TH AND 6TH 1923).									
Name of pupil.	Burt's Directions.		Burt's Vocabulary.		Prince and Crow.		Prince and Tiger.		Name of pupil.
	Expt.	Cont.	Expt.	Cont.	Expt.	Cont.	Expt.	Cont.	
1. Manik . . .	...	...	...	...	...	...	...	...	...
2. Susil . . .	4	3.5	30	26.5	5	5	17	14	Jitendra.
3. Samarendra . . .	3.5	—	21	16.5	...	...	16.5	...	Jyotirmay.
4. Prodgot . . .	3	1.5	23	19	1.5	1.5	8	4.5	Gandheram.
5. Oahidur . . .	3	2.75	16.5	13	5	5	15.5	9	Ashutosh.
6. Karim . . .	4	3	28	20.5	5.5	4	17	16	Parimal.
7. Amjad . . .	2.5	1	16	10.5	2	1	13	10	Amulya.
8. Haripada . . .	3.5	3.75	28	25	6.5	5	16	13.5	Robini.
9. Barendra . . .	3.5	2.5	25	22.5	4	0	15	7.5	Sukhada.
10. Mahinddin . . .	...	...	...	...	...	2	...	0	Animesh.
Mean . . .	3.4	2.6	23.5	21.2	4.1	2.5	14.5	10.5	
Superiority of Experi- mentals to Controls.	30.7 per cent.		10.8 per cent		65.7 per cent.		38.1 per cent.		

TABLE 78.—First Teaching Experiment. Result of the Third Test.

FOURTH TEST (DECEMBER 6TH, 1923)—Comprehension.										Name of pupil
Name of pupil.	King's Ring 8 questions. (Before questions.)		Dog and Hat 9 questions. (After questions.)		Moon in Water Total ideas 16. (Fixed time.)		Name of pupil			
	Expt.	Cont.	Expt.	Cont.	Expt.	Cont.				
1. Manik	5	..	8	3	14	5	Jitendra.			
2. Susil	8	5	7	3	15	3	Jyotirmay.			
3. Samarendran	3	5	5	3	9	3	Gandheram.			
4. Pradyot	6	1	3	0	3	3	Ashutosh.			
5. Oshidur	6	5	9	6	9	10	Parimal.			
6. Karim	8	5	4	5	9	11	Amulya.			
7. Anjad	7	5	3	3	7	6	Rohini.			
8. Haripada	5	7	6	8	9	11	Sukhada.			
9. Barendra	...	0	...	0	...	0	Animesh.			
10. Mahiuddin	8	0	4	3	9	5				
Mean	6.4	4.1	5.1	3.9	8.75	6.75				
Superiority of Experimentals to Controls.		34.5 per cent.		33.3 per cent.		29.6 per cent.				

TABLE 79.—First Teaching Experiments, Results of the Fourth Test, Comprehension.

FOURTH TEST (DECEMBER 1923)—Speed.					
Name of pupil.	King's Ring (Before questions) Rate (words per minute).		Dog & the Hat (After questions) Rate (words per minute).		Moon & Water Fixed time. Time allowed 7½ minutes.
	Expt.	Control.	Expt.	Control.	
					Total No. of words 157. (Rate 20·0 words per minute).
Manik	203	...	91	...	...
Susil	81	81	88	98	...
Samarendra	97	...	85	77	...
Prodyot	90	23	72	16	...
Oshidur	23	41	27	59	...
Karim	111	17	95	57	...
Amjad	90	94	88	88	...
Haripada	58	18	82	27	...
Barendra . . . . .	..	17	...	77	...
Mahiduddin	122	72	91	30	...
Mean	82·1	49·4	78·5	57·6	...
Superiority of Experi- mental to Controls	66·2 per cent.		36·2 per cent.		
					Jatindra. Jyotirmay. Gandreram. Ashutosh. Parimal. Anulya Robini Sukhada. Animesh.

TABLE 80.—First Junior Teaching Experiment, Results of the Fourth Test, Rate.

Jatindra.
Jyotirmay.
Gandheram.
Ashutosh.
Parimal.
Amulya
Rohini.
Sukhada.
Animesh.

FOURTH TEST (DECEMBER 1923).

Name of pupil.	Tests (Total Comprehension score).		School Marks in the annual Examination (reduced to Maximum 33).		Name of Pupil.
	Expt.	Control.	Expt.	Control.	
1. Manik . . .	27		29		Jitendra.
2. Susil . . .	30	13	27	23	Jyotirmay.
3. Samarendra . . .	17	11	27	27	Gandreram.
4. Prodyot . . .	12	4	17	18	Ashutosh.
5. Oshidur . . .	24	21	18	23	Parimal.
6. Karim . . .	21	21	26	25	Amulya.
7. Amjad . . .	17	14	18	13	Rohini.
8. Haripada . . .	20	26	28	30	Sukhada.
9. Barendra . . .		0	..	21	Animesh.
10. Mahinddin . . .	21	8	24	20	
Mean=	20.3	14.8	23.1	22.3	
FOURTH TEST (DECEMBER 1923).					
Superiority of Ex- perimentals to Controls . . .	Tests.		School Annual examination.		
	37.2 per cent.		3.9 per cent.		

TABLE 81.—First Teaching Experiment. Results of tests and School annual Examination results in English compared.

FIFTH TEST (DECEMBER 1923) KANSAS TEST (FORM I. TEST I ORIGINAL FORM).							
Name of pupil.		Comprehension Score.		Rate Score.		Name of pupil.	
		Expt.	Control	Expt.	Control.		
1. Manik . . .	5	..	44	..		Jitendra	1
2. Susil . . .	1	0	8	0		Jyotirmay	2
3. Samarendra . . .	3	0	44	0		Gandreram	3
4. Prodyot . . .	2	0	15	0		Ashutosh	4
5. Oshidur . . .	0	0	0	0		Parimal	5
6. Karim . . .	2	0	15	0		Amulya	6
7. Amjad . . .	1	0	15	0		Rohini	7
8. Haripada . . .	1	2	15	15		Sukhada	8
9. Barendra . . .	1	0	8	0		Animesh	9
10. Mahiuddin . . .	1	1	15	15			10
Mean=	1.3	0.3	15	3.3			
Superiority of Ex- perimental to Controls . .		Comprehension Score.		Rate Score.			
		300 per cent.		350 per cent.			

TABLE 82.—First Teaching Experiment, the results of the Kansas Test.

APPENDIX TO CHAPTER 9.

Records and Results of Tests of the Second and Third Teaching Experiments.

Number of Letters.	Number of boys who recognised small letters.	Number of boys who recognised Capital letters.
26	1	1
25	...	...
24	...	...
23	1	...
22	1	2
21	...	...
20	1	2
19	...	...
18	1	...
17	...	...
16	...	1
15	2	...
14	...	...
13	...	...
12	...	2
11	1	1.
10	3	3
9	...	1
8	2	1
7	2	1
6	2	3
5	2	1
4	2	1
3	2	2
2	2	2
1	...	1
0	1	1

TABLE 88.—The Letter Knowledge of Class II, Second Teaching Experiment before teaching commenced.

Lesson number.	Number of days taken to teach the lesson.	Total Number of days	Number of new words introduced.	Total of new words.	Nature of the lesson.	Letters taught in the lesson.
1	1	...	2	...	Picking out vowels	A, E, I, O, U
2	2	3	5	7	Disconnected sentences.	T, S
3	2	5	5	12	Do.	H
4	1	6	3	15	Do.	Th.
5	2	8	8	23	Do.	N
6	2	10	8	31	Do.	M
7	2	12	8	39	Do.	P
8	1	13	4	43	Do.	F
9	1	14	4	47	Do.	Y, R
10	4	18	6	56	Silent Drill	D
11	8 3+5*	26	19	75	Story	W
12	8 2+6	34	12	87	Do.	G
13	7 3+4	41	12	99	Do.	K
14	6 3+4	47	10	109	Do.	B
15	6 3+3	53	18	127	Do.	L
16	5 (2+3)	58	14	141	Do.	C
17	7 (3+4)	65	17	158	Do.	V
18	6 (3+2)	71	19	177	Do.	J
19	5 (2+3)	76	21	198	Do.	Q, X, Z
20	1	77	10	208	Figures.	1-9
21	5	82	0	...	Revision Exercises.	...
Total	82	...	208	...	...	...

TABLE 84.—Progress of the Second Teaching Experiment, January to April, by lessons.

* Preparatory matter 3 days—Actual story 5 days.

Week.	Letters learned.	New words learned.	Total.	Lessons finished.	Actual letters.
1	8	15	...	1—4	a. c. i. o. u. t. s. h.
2	3	24	30	5--7	n. m. p.
3	4	17	56	7—10	f. y. r. d.
4	1	19	75	11	w.
5	1	7	82	11—12	g.
6	...	5	87	12	—
7	1	12	99	12—13	k.
8	1	10	109	13—14	b.
9	1	8	117	14—15	l.
10	1	17	134	15—16	c.
11	...	...	...	16	—
12	1	17	151	17	v.
13	1	18	169	18	j.
14	3	19	188	19	q. x. z.
15	(Figures)	20	208	20 and revision of vocabularies.	—
16	...	...	208	Tests and revision	—
17	...	...	208	Tests and revision and tests.	—

TABLE 53.—Weekly progress of the Second Teaching Experiment.

Name of boy.	BEFORE TEACHING.				AFTER TEACHING.			
	Big Letters.	Small Letters.	Bur's Vocabulary.	T. C. Vocabulary.	70-70 word Vocabulary, April 1922.	T. C. Vocabulary Part I.	Special Kansas 1st trial.	Special Kansas 2nd trial.
1. R.	26	26	6	6	350	39	3	3
2. H.	22	22	1	3	363	36	2	6
3. S.	2	1	0	0	163	26	0	6
4. M.	23	20	4	0	213	33	1	2
5. A.	6	6	0	0	118	25	1	5
6. N.	2	2	0	0	a	a	0	a
7. G.	11	10	0	0	175	38	1	7
8. U.	15	16	0	0	a	a	0	1
9. H.	20	22	0	0	213	3	0	1
10. F.	5	3	0	0	88	23	1	2
11. A.	3	5	0	0	50	17	0	0
12. L.	8	7	0	0	0	19	0	0
13. M.	4	12	0	0	13	26	0	1
14. M.	4	2	0	0	25	14	0	1
15. R.	3	3	0	0	25	29	0	1
16. D.	7	6	0	0	13	6	0	0
17. A.	0	0	0	0	63	23	0	2
18. N.	10	10	0	0	a	a	a	a
19. B.	6	4	0	0	a	a	a	0
20. G.	7	6	0	0	50	1	1	1
21. K.	10	10	0	0	263	23	1	4
22. A.	10	12	0	0	413	33	1	3
23. H.	5	8	0	0	a	a	a	a
24. S.	8	11	0	0	a	a	a	a
25. S.	15	9	0	0	a	a	a	a
26. R.	18	20	0	0	213	37	0	4
	9.6	9.7	0.42	0.35	147.4	23.5	0.6	2.8

TABLE 86.—Test results of the Second Teaching Experiment after 82 days.

Names.	PRELIMINARY TESTS, 3RD JULY 1921.							AFTER 10 WEEKS.
	70-70 word Vocabulary Test, 3rd July 1921.		T. C. Voca- bulary Test.		Special Kansas Test Form I.	Burt's Vocab- ulary.	Burt's Direct- ions.	Special Kansas test.
	Test I.	Test II.	Form I.	Form II.	Test I.			
1 M	200	125	18	21	0	10	0	4
2 A.	225	325	20	23	0	17	0	4
3 B.	150	200	17	19	0	8	1	8
4 S.	100	200	21	23	0	10	0	5
5. B.	75	50	19	19	0	6	1.5	0
6. H.	550	400	36	40	0	22	2.5	6
7. A	550	550	35	32	0	17	1.5	6
8. N.	150	100	20	22	0	10	0	4
9. B.	100	125	15	6	0	10	0	4
10. M.	275	275	31	32	0	16	2	7
11. B.	325	450	32	38	0	14	0	7
12. D.	100	150	12	10	0	11	2	5
13. B.	400	475	37	36	0	21	1	6
14. S.	175	225	15	19	0	10	1	8
15. M.	200	250	18	22	0	18	1.5	3
16. S.	50	75	18	21	0	11	0	5
17. S	75	75	18	16	0	9	0	0
18. H.	100	50	23	26	0	9	0	3
19. J.	150	150	21	21	0	9	.5	6
20 S.	200	325	21	29	0	16	2.5	5
21. T.	200	575	33	31	0	10	.5	6
22. P.	0	0	7	0	0	0	0	...
23. S.	175	275	22	13	0	15	1	5
24. T.	100	75	12	10	0	16	2	4
25. G.	625	375	36	28	0	20	1.5	5
26. S.	100	225	16	11	0	15	1	3
27 S.	100	50	6	4	0	8	0	2
28. R.	475	675	37	29	0	19	2.5	5
29. T.	50	0	12	5	0	6	0	0
30. J. . . . .	...	...	...	...	...	...	...	...
	215.5		21.9	22.1	0	12.4	0.9	4.7

TABLE 87.—Results of the Third Teaching Experiment after 50 days.

APPENDIX TO CHAPTER 10.

The results of the End-tests of the Second and 3rd Teaching Experiment.

The table is to be read as follows:—In special C. B. I. test the score of 3.6 per cent. of Experimental Class III fell midway between the mean score of Class VIII and Class IX of the Collegiate School, and 14.3 per cent. midway between Class V and VI. The score of 1.8 per cent. of the boys of Experimental Class II fell midway between the mean scores of Class V and Class VI of the Collegiate School.

Mean score of the classes of the Collegiate School.	SPECIAL C. B.—PART I.				SPECIAL C. B.—PART II.				SPECIAL KANSAS.			
	C. B.—I mean.	Per cent. Class III equal to mean of	Per cent. Class II equal to mean of	Per cent. in the Collegiate School class qualified.	C. B.—II Mean	Per cent. Class III equal to mean of	Per cent. Class II equal to mean of	Per cent. in the Collegiate School class qualified.	Kansas mean.	Per cent. Class III equal to mean of	Per cent. Class II equal to mean of	Number of boys tested.
Class X	31.6	...	...	92.9	36.8	...	...	85.7	16.7	...	...	14
Class IX	57.1	...	...	77.8	60.8	...	...	88.9	16.1	...	...	18
Class VIII	79	3.6	...	83.3	95.5	...	...	87.3	15.2	10.7	...	21
Class VII	95.2	...	...	71.1	130.7	10.7	...	66.7	...	3.6	...	27
Class VI	100.6	...	1.8	69.6	133.3	3.6	1.8	13.5	5.1	17.0	...	23
Class V	121.7	11.3	...	65.2	185.1	14.3	11.3	21.7	3.3	28.6	9.5	...
Class IV . . . . .	...	...	...	...	...	3.6	...	...	...	11.3	23.8	...
Class III . . . . .	...	...	...	...	...	...	...	...	1.7	...	...	21
Experimental Class II	171	...	...	71.1	177.6	...	...	33.3	1.6	...	...	23
Experimental Class I	138.8	...	...	71.1	131.1	...	...	12.9	3.3	...	...	...

TABLE 88.—Comparison of the Results of the End-tests of the Experimental Classes with the results of the same tests applied to the Classes of the Collegiate School.

* (or including a boy who qualified as to comprehension but not as to time, 16.1).

CLASSES OF THE ARMENITOLA SCHOOL.	SPECIAL C. B.—PART I.				SPECIAL C. B.—PART II.				SPECIAL KANSAS.			Number of boys tested.
	C. B.—I. Mean	% Class III equal to mean of	% Class II equal to mean of	% of cases in Armeni- tola class qualified.	C. B.—II Mean	% Class III equal to mean of	% Class II equal to mean of	% of cases in Armeni- tola class qualified.	Kans.- Mean	% Class III equal to mean of	% Class II equal to mean of	
Class X . . .	69.6	3.6		87.5	77.5			93.8	13.5			20
Class IX . . .	69.6			77.8	74.4			66.7	8.6			15
Class VIII . . .									9.0	10.7		17
Class VII . . .	102.2			78.9	116.2			78.9	3.7			17
Class VI . . .	94.5	4.8		82.6	123.2			78.3	6.9	3.6	19	21
Class V . . .	127.2	11.3	4.8	73.9	156.9	17.9	9.5	19.5	1.8	16.1	23.8	26
Class IV . . .	158.5	39.3	23.8			10.7	1.5			11.3		..
Class III Experimental Class II	171			61.5	101.7			23.1	1.5			29
Experimental Class III	138.8	3.6		71.4	177.6			33.3	1.6			21
				71.4	147.4	3.6		42.9	3.3			28

TABLE 89.—Comparison of the Results of the End-Tests of the Experimental Classes with the results of the same tests applied to the Classes of the Armenitola School.

Boy.	Stated Age.	True Age.	Special Kanwa, Rate.	Special Kanwa, Comprehension.	Special C. B. (Bengali) Number of correct answers.	Special C. B. (Bengali) Time units.	Special C. B. II (English) Number of correct answers.	Special C. B. II (English) Time units.	70-70 word Vocabulary (mean of two parts).
R.	9	10	44	5	10	132	11	174	637.5
H.	6	8	15	2	10	132	9	131	502.5
S.	10	9	31	2	11	119	11	187	502.5
A.	7	8	31	3	10	132	(5)	(110)	537.5
G.	11	8	31	3	9	144	(4)	(140)	375
H.	8	9	...	0	11	225	(1)	(114)	467.5
F.	8	8	15	0	(6)	(252)	(4)	(204)	425
A.	2	8	15	3	10	237	(1)	(203)	200
T.	5	9	15	1	10	237	(1)	(303)	200
M.	3	10	...	0	(2)	(318)	(3)	(167)	112.5
N.	7	10	...	0	(6)	(215)	(3)	(207)	175
A.	8	10	31	1	10	190	(3)	(220)	325
G.	5	8	...	0	(1)	(215)	(1)	(185)	150
K.	8	11	...	0	11	206	12	188	525
A.	1	10	...	1	13	173	9	178	512.5
S.	7	7	14	4	12	215	(5)	(250)	167.5
H.	2	9	15	2	12	212	(4)	(250)	562.5
C.	9	10	15	3	13	147	11	215	537.5
H.	10	10	14	2	9	252	(2)	(167)	462.5
L.	9	13	8	0	10	224	(3)	(168)	437.5
A.	3	10	...	0	(0)	(253)	(0)	(250)	112.5
Mean	8	9	10.5	1.6	(Qualified 71.5%)	163.7	(Qualified 33.3%)	177.6	311.3

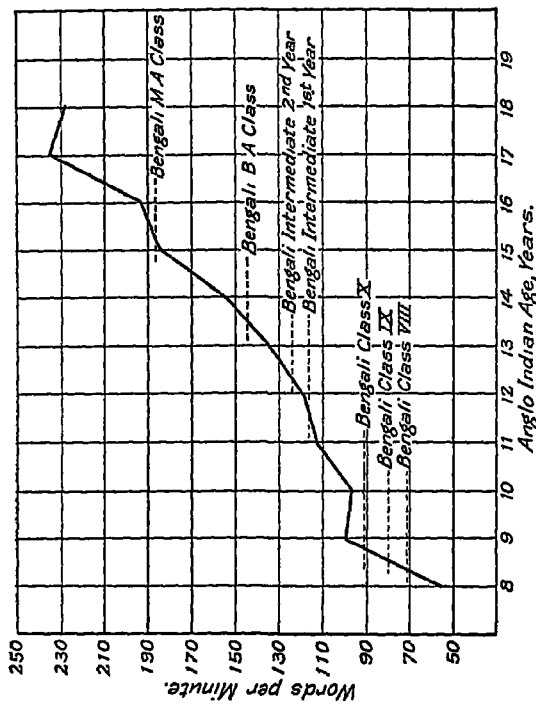
TABLE 90.—The results of the End-tests of the Second Teaching Experiment (Experimental Class II) after 141 days.

Boy	Stated age.	True age.	Special Kansas Rate.	Special Kansas comprehension.	Special C. B. I (Bengali) Number of correct answers.	Special C. B. I (Bengali) Time units.	Special C. B. II (English) Number of correct answers.	Special C. B. II (English) Time units.	70-70 word Vocabulary mean of two parts.
1. R.	7	6	31	3	(7)	(250)	(5)	(212)	689.5
2. B.	7	11	15	3	12	142	9	116	762.5
3. M.	8	9	54	5	12	155	12	183	612.5
4. D.	7	10	...	0	(2)	(250)	(1)	(216)	425
5. S.	8	1	59	9	9	112	11	156	837.5
6. B.	7	11	67	10	12	163	(7)	(105)	1,025
7. B.	9	11	31	1	12	116	(7)	(182)	1,125
8. B.	8	6	15	1	(6)	(180)	(7)	(222)	487.5
9. B.	8	1	44	6	12	145	12	186	940
10. B.	8	2	31	3	11	70	12	130	762.5
11. C.	8	8	31	3	12	190	(8)	(223)	712.5
12. P.	8	7	59	9	12	151	12	142	870
13. D.	7	6	15	2	(6)	(250)	(5)	(300)	662.5
14. R.	8	4	37	4	12	163	(4)	(173)	437.5
15. S.	11	4	15	1	10	158	(3)	(215)	350
16. S.	7	6	31	3	12	131	(5)	(223)	687.5
17. D.	8	3	31	2	11	157	(1)	(166)	absent
18. P.	10	8	44	3	12	140	9	(300)	730
19. G.	8	9	...	0	(2)	(204)	(0)	(135)	362.5
20. R.	8	1	31	3	(6)	(116)	(5)	(304)	562.5
21. B.	7	9	31	3	13	131	(9)	117	112.5
22. M.	10	4	31	1	(5)	152	(3)	* 191	745
23. R.	8	3	...	0	(5)	(187)	(4)	(134)	675
24. D.	8	4	22	1	(2)	(250)	(7)	(288)	350
25. A.	7	9	37	4	12	168	11	183	850
26. S.	7	9	31	3	12	142	12	192	absent
27. D.	7	3	37	1	12	116	12	110	1,100
28. M.	7	4	15	2	12	113	11	127	1,187.5
Mean	8	8	30.2	3.3	Percentage qualified 71.4%	188.8	Percentage qualified 46.4% * (or 12.9% on test page 300.)	151.1 (or 117.4)	672.7

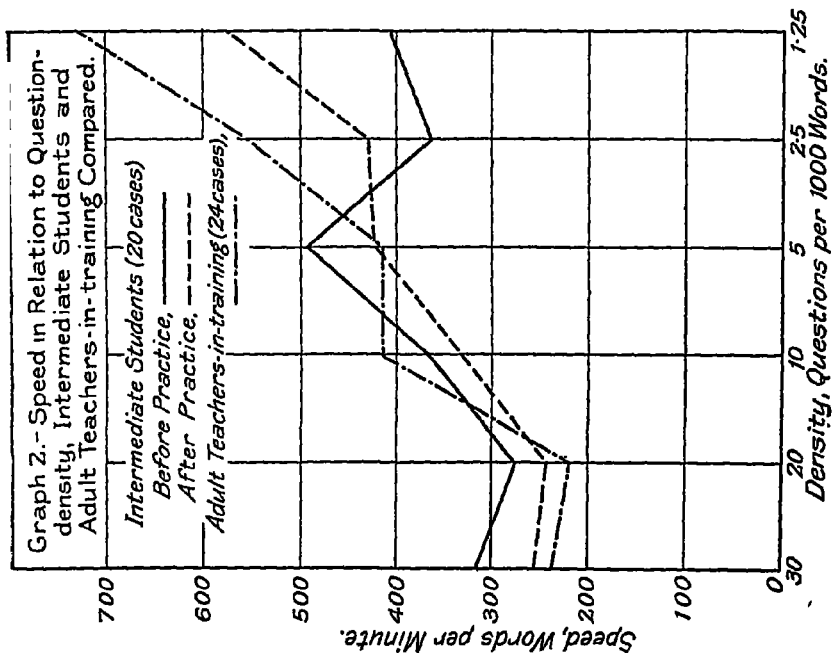
TABLE 91.—Results of the End-tests of the Third Teaching Experiment (Experimental Class 3) after 94 days.

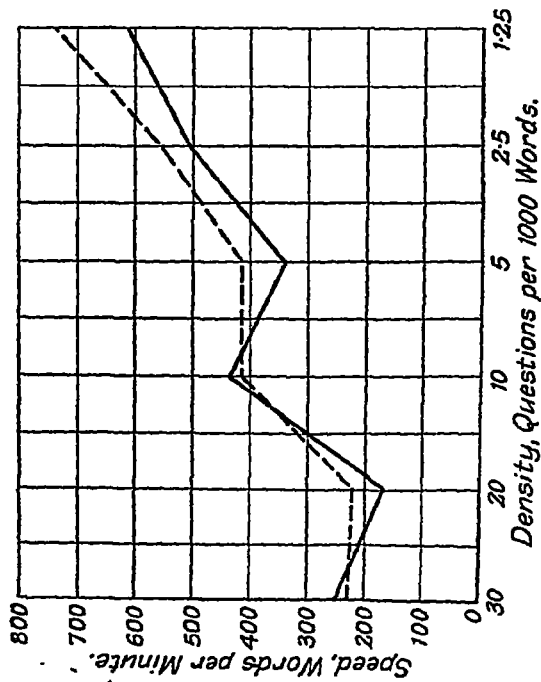
LIST OF DIAGRAMS.

- Graph 1.—Age of Anglo-Indian girls and Bengali boys compared in respect of C. B. II English reading test.
- Graph 2.—Speed in relation to Question-density. Intermediate students and Adult Teachers-in-training compared.
- Graph 3.—Speed in relation to Question-density. Adult Teachers-in-training, easy material.
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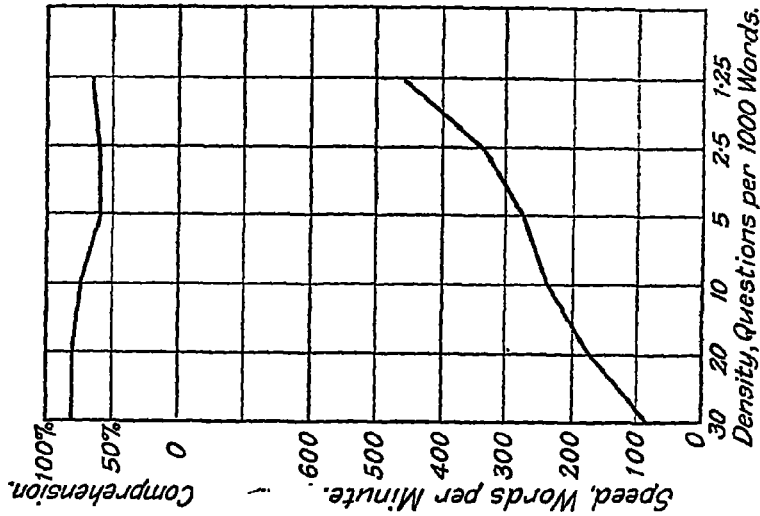


Graph 1.-Age of Anglo Indian Girls and Bengali Boys Compared in Respect of C.B II English Reading Test.

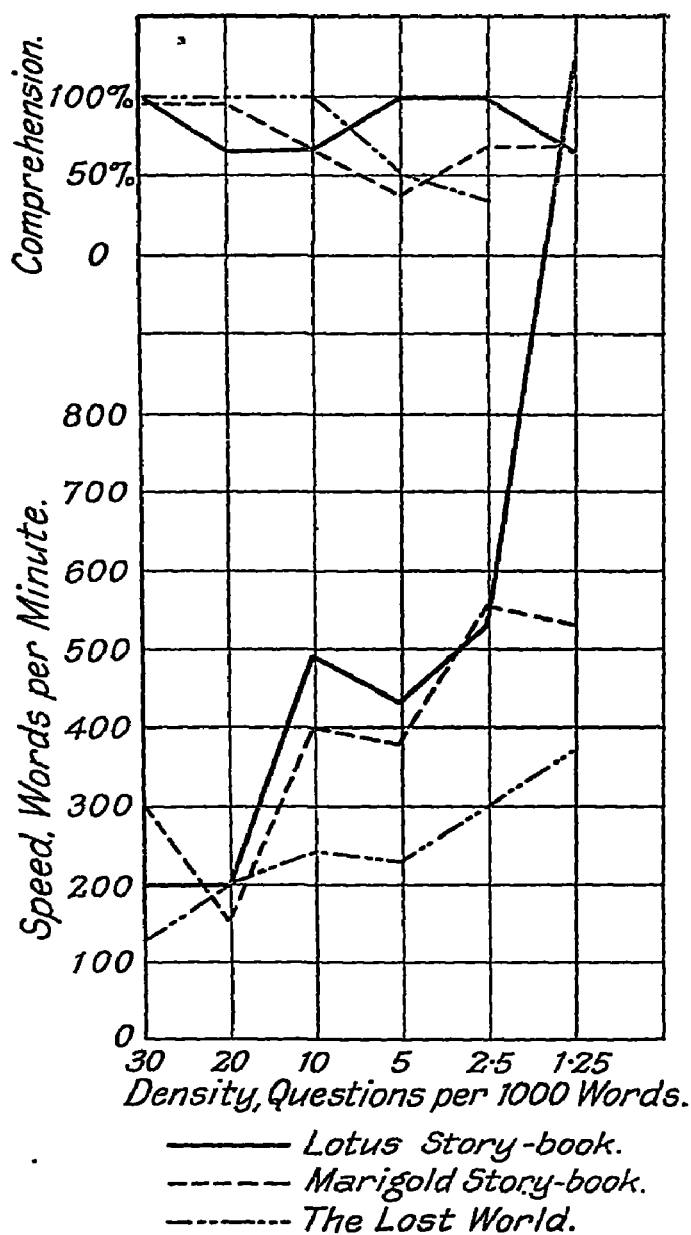




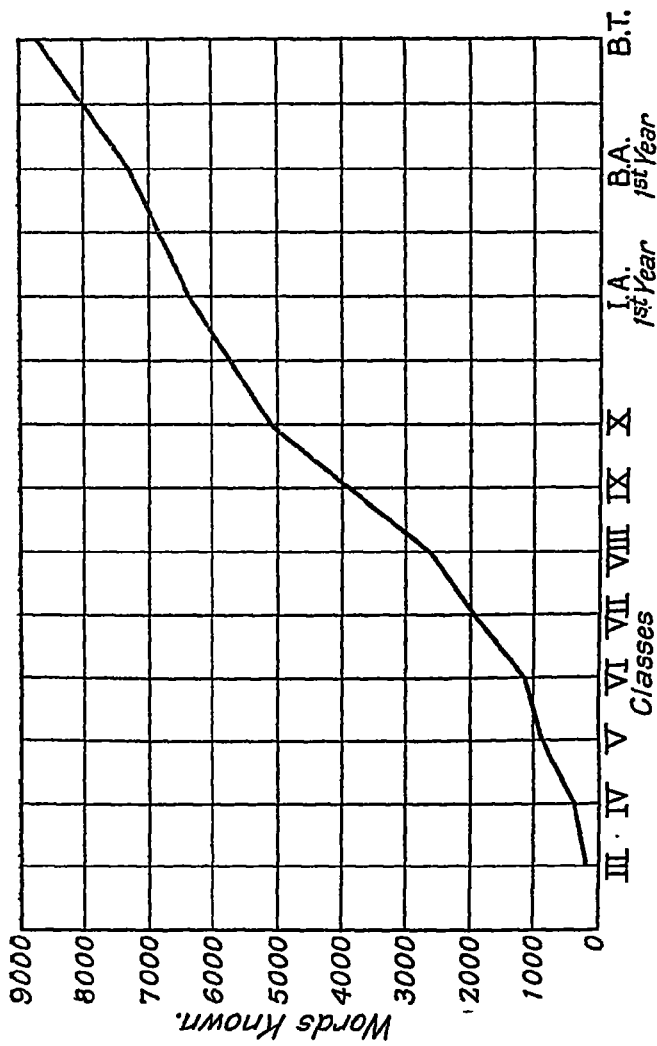
Graph 3.-Speed in Relation to Question-density,
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Graph 5.- An Individual Reading Profile.
(K.G.G.)



Graph 6.- The English Vocabulary of a Bengali Boy.

GLOSSARY.

The definitions given below are intended merely to explain particular words as they occur in the text. They are not intended to serve as universal or absolute definitions.

A

Accomplishment Quotient.—One hundred times the Educational Age (*q.v.*) divided by the Mental Age (*q.v.*).

Adaloti (style).—The dialect of Bengali current among those connected with the law.

After-question.—A question asked after reading has taken place. A test of reading or a practice exercise in reading, in which the pupil reads the passage without knowing what questions will be asked and, after reading, is required to answer questions on the substance, is called an "After-question test" or "After-question system of practice."

Age-Discrepancy.—The discrepancy between the Chronological Age of the pupil and the Mental Age of the books written in a foreign language which he is able to read with any ease and satisfaction. The Mental Age of the book means the age of the normal child in whose mother-tongue it is written for whom the book is suitable in point of interest.

Americanization.—The process of assimilating foreign immigrants into the American nation and American culture.

Analytic Tests.—Analytic Tests endeavour to analyse a school subject into a number of "pure" mental functions and to measure each separately.

Anglo-Indian.—This is the official term for person of mixed European and Indian parentage. The term is, however, used loosely in the text, as some of the children referred to were of pure European parentage, born in some cases in India, and in some cases in Europe. Indian children studying in the European Schools were excluded from the tests.

Application Tests.—Application Tests endeavour to measure to what extent the knowledge or skill acquired in a school

C

Catenize.—To learn to pronounce accurately and rapidly a given succession of sounds, without conscious calculation, and generally apart from considerations of meaning. (See Palmer, H. E., *Scientific Study and Teaching of Languages*, 1917, page 309.)

C. B.—The Silent Reading test based on a story entitled "Chandra Bai and Ratna Bai,"—the Chandra Bai test. The test consists of three parts C. B. I, C. B. II and C. B. III.

Chinn.—A Hill-tribe of Mongoloid stock inhabiting the Western frontier of Burma, as numerous in dialect as the villages in which they live. They possess no written language and acknowledge no central authority. They are unsparing in war, but possess an intelligence which has enabled them to discover for themselves the manufacture of gunpowder.

Cholit (style).—The popular dialect of Bengali.

Chronological Age.—The actual age of a person in terms of Time (*viz.*, years of life) as contrasted with Physical Age, Mental Age, Educational Age.

Glass X.—The highest class in the High English Schools in Bengal. Boys (who are not less than sixteen years of age) sit for the Matriculation Examination at the end of this year of work. (In 1925 this age restriction was reduced to fifteen years.)

Composite textbook.—A textbook intended for teaching a foreign language in which no separate provision is made for practice in Speech, in Writing and in Reading; but in which the same passages, exercises and vocabulary are provided for all three purposes, no allowance being made for difference in rate of progress in these different departments.

Conspicuous Waste.—A conspicuously wasteful article or occupation is a sign of freedom from the necessity for economy, *viz.*, of superfluous time or wealth, and thus may be used by the leisured and wealthy classes as a symbol of wealth and leisure. Example (of Conspicuous Waste of Wealth) motor-cars unnecessarily large and powerful for the work required of them (of conspicuous Waste of Time)—learning a foreign language of which the learner has no real need.

Constant. To hold.—A factor is “held constant” in a Mental or Educational Test, by so arranging the test that the factor shall exert no discriminating influence on the scores. Thus speed of handwriting may be held constant by allowing so much time for writing that even the slowest writer has ample time for it.

Correlation. Coefficient of.—Correlation is a tendency towards concomitant variation, and the Coefficient of Correlation is a measure of such tendency. Example:—Given two sets of measures of the same persons in the same or in two different traits, the Coefficient of Correlation indicates the tendency of the one set of measures to agree with the other set, so that a person scoring high marks in Test A will score more or less correspondingly high marks in Test B. The Coefficient will similarly indicate a tendency to disagree, so that a person scoring high marks in Test A will score more or less correspondingly low marks in Test B. A Coefficient of +1 indicates complete Agreement, a Coefficient of -1 complete Disagreement.

Correlation of Subjects.—The attempt to co-ordinate the syllabus and teaching of various subjects so that the pupil may realise the inter-relations of the subjects. Thus, for example, Geometry and Geography might be “correlated” in a problem of Survey and Map-construction.

Credit-index (of a word).—An index-figure appended to each word in a Word-frequency List which is derived from the comparative commonness of the word in the language, and thus indicates the relative value of the word to a learner of the language.

D

Dalton Plan.—A system of education which (for the most part) replaces class teaching by individual study and guidance in Subject-laboratories. (The child contracts to perform certain units of work within a specified time. The rooms of the school-building are allocated to subjects, and the teacher of each subject remains in his subject-room, called a “Laboratory.” A child working on a given subject does so in the subject-laboratory, asks help from the teacher when necessary, and presents his unit of work when it is completed to the teacher. The child’s allotment of his time and order of work are left free.)

Density.—(See Question-density.)

Direct Bond.—The direct link between an idea and the corresponding word of a foreign language, or the direct link between the word of a foreign language and the idea, without the intermediary of the mother-tongue. (See also Bond, Indirect Bond.)

Direct Method (of teaching a foreign language).—A system of teaching a foreign language which aims at producing the Direct Bond (see above). The term is commonly used to denote a system of largely oral instruction in which the introduction of the mother-tongue is studiously avoided (See also Indirect Bond.)

Division of Bengal.—Bengal is divided into five administrative units, called Divisions. At the head of each Division is a Commissioner. The Divisions are sub-divided into Districts, at the head of each of which is a District Magistrate or "Collector."

E

Educational Age.—The Age-norm (see "Norm") to which the accomplishment of a child corresponds in a given subject is the Subject-age of the child. The Educational Age is the composite of the various subject-ages. (On the method of calculating this composite age, see McCall, W., *How to Measure in Education*, 1922, page 25.)

Elimination (Wastage).—The loss of pupils from the educational system before the completion of the full course.

Elimination (of a factor).—A general term for treatment of a factor in a test in such a way that it may not influence the test scores. The factor may be excluded altogether or "held constant" (*q.v.*).

Evocative aspect or use of language.—The use of words not in their strict and exact meaning but with the object of producing a required attitude or emotional tone in the hearer or reader.

Expressive aspect of language-study.—Language-study which aims at conferring the power of self-expression in speech or in writing in the foreign language.

F

Faculty Psychology.—The "Faculty Psychology" considered the class-concepts of Psychology (*e.g.* Attention, Memory,

Imagination, etc.) as psychical forces or "faculties," and referred psychical processes to their separate or united activities. In the educational application of the Faculty Psychology it was believed that these faculties were capable of a general training which would affect all the individual functions comprised in the class concept.

Filtration.—The Policy of, Theory of.—It was believed in the early stages of education in India that, if a bilingual modern education were supplied to the upper classes, this education would "filter" down through translation, original writing in the vernacular and teaching into the vernacular education of the populace.

Filtration, Method of.—The passing of an excerpt of literature through a chain of translations into and out of a foreign language in order to study the changes produced in it by the contents and quality of the mind of a foreign people.

Fixations.—Momentary stoppages of the eye in the lateral movement of reading. During these stoppages the actual perception of the written or printed words takes place.

Flash-card.—A word or short sentence is written on a card: the card, called a "flash-card," is exposed to the class for a very short interval (flash) so as to give training in instantaneous recognition.

Foreign Medium.—The use of a language other than the mother-tongue of the pupil as a medium in the process of instruction, study, or examination. In its popular usage the Foreign Medium refers especially to the use of a foreign language by the teacher in his oral exposition.

Formal Discipline.—The general reaction upon the abilities of a student which was by many supposed to spring from the method of study rather than from the content which is learned.

Frequency List.—See Word Frequency List.

G

Golden Mohur (also called "Gold Mohur").—A tree of the Mimosa family whose brilliant red flowers are a conspicuous feature of Bengal in the Hot Weather.

Grade.—The American term for a school class or standard. For the age-equivalencies of American grades, see Table 36.

Great Society.—A term used by Graham Wallas to denote the international nature of the commercial and industrial organisation of the modern world.

Group Test.—A mental or scholastic test which is applied to a number of children simultaneously, not one by one as in Individual Test.

I

Ido.—An artificial language intended for international use.

Index Memory.—The power of recalling where information is to be found, rather than the actual information itself.

Indirect Bond.—The link from ideas to words in the mother-tongue and thence to words in the foreign language, or from foreign words to words in the mother-tongue and thence to ideas. See Direct Bond, Direct Method.

Intelligence Quotient.—One hundred times the Mental Age (*q.v.*) divided by the Chronological Age (*q.v.*). The Intelligence Quotient of a child who is of normal intelligence for his age will, therefore, be 100, of a sub-normal child some figure below 100, of a super-normal child some figure above 100.

Intermediate College.—The Intermediate College in Bengal is a College with a two years' course intermediate between the Matriculation and the Graduate classes.

K

Khata.—The Bengali word for a School Exercise-book. The English word "Exercise-book" is not generally used or understood in Bengal.

Kunja-lata.—A creeping plant which produces a white flower during the Monsoon in Bengal.

M

Madrassah.—An institution for the education of Muhamedans in Muhamedan subjects.

Mafossil.—The countryside in India; that part of the country which is distant from any large town or city.

Magh.—A tribe originally inhabiting Aracan in Burma, now settled in the Chittagong Hill Tracts. The language is a dialect of Burmese and contains no literature.

Mean, or Average, that is the sum of a series of measures divided by the number of measures in the series.

Median.—That point on the scale of the frequency distribution on either side of which one half of the measures falls; or (as a rough definition), the score of the middle boy or case, when the scores have been arranged in order of magnitude.

Mental Age.—The age of a normal child to which the given child is equivalent in respect of Intelligence.

N

Nadiya.—An ancient city of Bengal, founded in the eleventh century, famous as a seat of Sanskrit learning. The religious reformer Chaitanya flourished there in the fifteenth century. The ancient city is now submerged in the Ganges, and a new city, still devoted to Sanskrit learning and to the doctrines of Chaitanya, has arisen in the vicinity.

Nominal Age.—The average age of a class or grade as estimated from the minimum age at which the End-examination of the school may be taken and from any other official regulations in regard to age. In the present book the minimum age at which a Bengali boy was at that time permitted to sit for the Matriculation examination has been taken as the basis of calculation. (See "Class X.")

Norm.—Norms in Educational Measurement are of two main kinds, Age Norms and Grade Norms. The Age Norm is the Average (mean or median) achievement of a sufficient sample of boys (or girls) of that age as measured by the given Mental or Scholastic test. A Grade Norm is the average achievement of a sufficient sampling of a given grade (q.v.) on the given test. In order to be "sufficient" a norm must be the average of a sufficiently large number of cases selected sufficiently widely from the grade or age to be representative of the whole age—or grade—population.

O

Observational Reading.—That type of Reading in which the reader maintains a more or less passive attitude, observing the points as they arise in the text, without expecting or searching for them.

Over-run.—The tendency of the figure dials in a calculating, adding, or counting machine to be carried by impetus beyond the correct total.

P

Passive Aspect of language study.—Language-study which aims at conferring the power of Reading or of Understanding speech in a foreign language.

Pathsala.—A Bengali Primary School.

P. E.—Probable Error of a Co-efficient of Correlation.

$\cdot 6745 \frac{1-r^2}{\sqrt{N}}$. To ensure a satisfactory degree of reliability the co-efficient should be at least four times the size of its Probable Error. (The term has other significances but these do not occur in the present book.)

Plateau in a Reading Growth-curve.—A flat interval of little or no improvement or increase. (See Reading Profile.)

Ponditi (style).—The scholarly, Sanskritic style of Bengali prose.

Profile.—See Reading Profile.

Project Method.—A method of teaching in which the matter, instead of being classified into subjects, is co-ordinated round a central Purpose or Project, more or less irrespective of subject. Example:—The Project "To design a foot-bridge over the stream" may involve Mathematics, Drawing, Physics, etc.

Pure (measure or test).—A "pure test," or a test which yields a "pure" measure in one which is a test of only a single function and which is uninfluenced by any other function. Thus a "pure" test of reading ability in one whose measures are uninfluenced by such factors as speed of handwriting, General Intelligence, etc. Similarly a "pure" practice-system is one which supplies practice in the single function or skill which is aimed at, and in no other.

Q

Question-density.—A measure expressing the relationship between the number of questions set on a given passage and the number of words contained in that passage. Question-density is expressed in the form "Number of questions per 1,000 words," viz., $1,000 \frac{\text{number of questions}}{\text{number of words}}$.

R

r.—The Co-efficient of Correlation (See Correlation) calculated by the Product-moment formula, viz., $\frac{\Sigma xy}{\sqrt{\Sigma x^2 \Sigma y^2}}$ where x and y are deviations from the mean of the series.

Rational Memory.—Memory for meaningful material, for ideas.

Reading Profile.—The characteristic shape of the graphical representation of the increase in an individual's Reading Rate as Question-density is decreased.

Reading Unit.—The amount of matter (number of words) which can be read at one time and of which the substance can be retained without an intervening review of the substance. This Unit seems to be smaller in the case where reading takes place in one language and review in another, than where reading and review are conducted with the use of the same language.

Receptive Aspect of language-study. The same as Passive Aspect (*q.v.*).

Referent.—The thing referred to by a word.

Regressive Movements.—Backward movements of the eyes over matter already perused. Such movements usually occur when there has been a failure of Comprehension, and are common in unskilled readers and in the reading of a foreign language.

Rejections.—Test-papers rejected in dealing with the scores of a Group test on the ground that the pupil has failed to comply with the conditions of the test.

Reliability (of a test).—The probability that a test applied again to the same group would yield the same result. Reliability may be determined by applying the same test in two forms to the same class and discovering the co-efficient of correlation (*q.v.*) between the two sets of results.

Renationalisation.—Alteration of the nationality and national culture of an individual or group.

Return Sweep (of the eye in reading).—The backward movement of the eye from the end of one line to the beginning of the next.

Rote Memory.—Memory for words as words more or less irrespective of meaning or for meaningless syllables.

S

Sahebi (style).—The European style of Bengali prose.

Saturation.—A condition of inability to profit from further education said to occur at about the adolescent period, especially in persons educated through a Foreign Medium.

Scanning or *Skimming*.—A rapid perusal of reading matter in which the required substance is extracted with the minimum of word-by-word reading.

Scatter (of Vocabulary).—The range of relative frequency of words (see Word-frequency List) over which the vocabulary in the foreign language of an individual (or class) is distributed. Since a vocabulary, consisting of any given number of words, " x ", should consist of the x commonest words in the foreign language, "Scatter" is measured in the form:—"Percentage of words in the given vocabulary, x , which are not included in the x commonest words in the language."

Schoolmaster's Generalisation.—The division of human knowledge into fixed categories, called "Subjects" and the treatment of many and various individual needs by a general administration of the same fixed syllabus in a subject. The generalisation of human needs in education under subject-heads, and into fixed syllabuses.

Score.—The mark obtained by the pupil on the result of a test to which he has been submitted; hence, as a verb, "to score," to obtain marks on the result of a test.

S. D.—Standard Deviation, from the Mean or Median. The square root of the sum of the squares of the deviations divided by the number of measures.

Selective Fallacy.—The idea that, because a certain educational system together with its end-examination attracts and selects a certain type of intellect or character, it has, therefore, produced that type and will produce it in any human material submitted to the education.

Sentiment.—An organised system of emotional dispositions centred round the idea of some object.

Short Circuit in learning.—The elimination of unnecessary intermediate steps or bonds which results from practice.

Solenoid.—A helix of conducting wire through which an electric current may be passed: when the current passes, the solenoid has special electro-magnetic properties.

Substitution Table.—A device for practice in the learning of a foreign language, consisting of a sentence-form, of which words or phrases may, with appropriate grammatical modifications, be replaced from a given list (or given lists).

Surrender Value of a school subject.—That proportion of the total ultimate benefit of the course up to that point which will be obtained at any given intermediate stage by a child who discontinues his study at that stage without completing the whole course.

Symbolic aspect, or use of language. The use of words as definite and clear-cut symbols of ideas, with the purpose of producing those ideas and none other in the mind of the hearer or reader.

T

Tabula Rasa (Theory of the —).—The theory in accordance with which the pupil is compared to a blank tablet (*tabula rasa*) on which the educator may inscribe what he pleases. (This type of educational theory does not allow for or does not believe in the limitation of the educator by the original nature of the pupil.)

Tens-transmission.—The process,—or the mechanism for the process,—of carrying forward the tens from the Unit column and the hundreds from the Tens Column, etc., in a calculating, adding, or counting machine.

Tol.—An institution for Sanskrit learning.

Transference of training.—The transference of improvement produced by training in some function to some other related function, without practice in that function.

Turn-over.—The order to turn over the page in certain types of Mental or Scholastic test. It is very important in such tests to ensure that the order is promptly obeyed.

U

Undistributed Score.—A Maximum score tends to show as equal persons who have only just scored the maximum and persons who, given the opportunity, could have scored more. Similarly a Minimum score includes persons who just did not score a single mark, and persons who were far from scoring a single mark. Either of such scores is

called an "Undistributed score." In order to "distribute" such scores it would be necessary to set, in the one case a harder test, and, in the other case, an easier one.

V

Vocabulary Index.—A passage which is written in such a way as to introduce no word which is outside the first X words of a recognised Word-frequency List is said to have a Vocabulary Index X (e.g., 3,000).

W

Wastage.—See Elimination.

Word-frequency List.—A list of words showing the order of their frequency of occurrence (or "commonness") in the speech or literature of the language.

Word Magic.—The idea of some fixed, or even supernatural, connexion between a word and its "referent." (See Referent.)

Work-Limit test.—A type of test which consists in measuring the time taken to complete a certain task.

w. p. m..—Words per minutes as a measure of speed of reading or scanning.

Z

Zero-words.—A word of which the credit-index on a Word-frequency List of n words is zero. The phrase has special reference to the Thorndike Teachers' Word Book, and in this connexion means that the word is outside the first 10,000 commonest words of the English language as shown by the Thorndike Word Book.

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